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International Turfgrass Society, Crop & Soil
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AS WE SEE IT

JERRY ROCHE, EDITOR-IN-CHIEF



Golf continues as media's environmental whipping-boy

Last month, it was Paul Harvey; this month, it's the famed *Wall Street Journal*. Will it never end?

In case you didn't see the May 2nd issue of the WSJ, a large headline proclaimed "**Golf Courses Are Denounced as Health Hazards.**" The half-page article carried a cartoon of a golfer who was trying to putt while decked out in what appeared to be one of those "moon suits" like scientists from the Disease Control Center wore in the recent TV mini-series "The Stand."

The article, written by staff reporter Timothy Noah, was surprisingly well done. At least Noah bothered to get some comments from Jim Snow of the USGA Green Section and Rick Norton of the NGF. But the headline and cartoon were clearly exaggerations.

Just for the fun of it, being a professional writer and editor of sorts, I decided to re-arrange the article's structure and phrasing a bit. However, my headline rewrite says: "**Golf Courses Are Lauded as Environmentally Safe.**"

Here's how the beginning of my version of the article sounds. Remember, too, that I'm using essentially the same information that the original writer used elsewhere (much later) in his article:

Golf courses are a positive influence on the U.S. environment, say many proponents.

"Golf courses are increasingly showing that they can be very positive environmentally," says Rick Norton, vice president of operations for the National Golf Foundation. Standards of pesticide use and exposure, he says, have "evolved over the years as people have become more conscientious and more careful."

My version of the article, of course, carried with it a cartoon of birds merrily chirping away while they watched happy golfers on a putting green below.

Noah's article goes on to say that the

New York Department of Conservation has recorded 25 cases of bird deaths since 1971 that "it says" are related to golf course pesticides.

My version of the article goes on to say this:

Reports of alleged harm to wildlife and human health from particular golf courses, however, have been scattered. For instance, in the last 24 years, the New York Department of Conservation has recorded just 25 cases of bird deaths that, it contends, may have been related to golf course pesticides.

Besides the statements Noah made about the birds, there are many points of contention in the original article. These were addressed in letters to the editor which were written by the Golf Course Superintendents Association of America, Responsible Industry for a Sound Environment, and the Chemical Manufacturer's Association. By the time this column appears in print, you may have seen them in the *Journal*.

The point to my whole exercise, however, was to see exactly how far in one direction that cold hard facts and quotations could be skewed.

The journalism professors at Ohio University warned me years ago to avoid influencing reader opinion through sentence and story structure. I've long suspected that certain of the media have been preying on the public's eager curiosity, superficial though it is. But I never really saw proof that a headline writer or reporter could so drastically skew the tone of a story—until now.

Jerry Roche

LANDSCAPE MANAGEMENT

'WE KNOW YOUR TURF'

JUNE 1994 VOL. 33, NO. 6

COVER FEATURE

.. 8 Water use: get involved!

It will be incredibly expensive to harness new supplies of fresh water—particularly to fulfill demands created by turfgrass irrigation during droughts—because of newer federal regulations. And our demand for water will double in 20 years.

Ron Hall

FEATURES

12 LM Reports: Overseeders

Work can be done manually—and we provide you with some tips—but seeders and overseeders make the job more time-efficient. Here are some of the products on the market.

Ron Hall

14 Customer satisfaction

You must distinguish between residential and commercial customer service. Customer retention levels increase for companies that have implemented these few tips.

Ed & Todd Wandtke

16 'Firescaping' yards

Landscapers and homeowners often make unwise planting decisions. A seemingly simple choice of gardening strategy can quickly cook one's goose.

James E. Guyette



22 Staffing a family business

Failure to address work-related issues, like organization, is often overlooked when relatives are involved. Sometimes, you have to go 'outside the nest.'

James E. Guyette

26 When should you expand?

...When you have the resources, when you see potential, and when you're not needed in one place every day. Here are some other guidelines.

James E. Guyette

27 Safer pitchers mounds

The pitchers mound is the focal point of any baseball infield, but most don't get enough maintenance. Here's how to bring yours up to specifications.

Ron Hall

28 Selecting trees

If you are going to be in the market for trees which you'll have to purchase from a local nursery, here are some questions to ask and some pointers to remember, compliments of "Urban Forests" magazine.

TECH CENTER

30 Heat and water stress

If often faced with maintaining acceptable turf with limited water, you can use grasses that need only naturally available water or reduced irrigation.

32 Athletic field soil: the injury factor

Consider athletic field soil conditions as the best possible growth situation for the turf, and the basis for player safety. Soil conditions must be suitable from both chemical and physical standpoints.

Henry Indyk, Ph.D.

GOLF 'SCAPING

36 Flowers add color clout

The best arrangements add excitement and reflect the mood and colors in the surrounding landscape.

Steve & Suz Trusty

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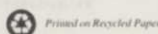
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Mid-season rescues of dying lawns are opportunities for good customer relations and repeat business. Here are some ways LCOs help new customers when the calls come in.

Terry McIver

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GreenCycle acts as a 'holding company' for land used to process landscape debris in five states, with more to come.

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Terry McIver

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On the cover: The Troon North Golf and Country Club, Scottsdale, Ariz. Superintendent: Jeff Spangler. Photo by Larry Kassell.

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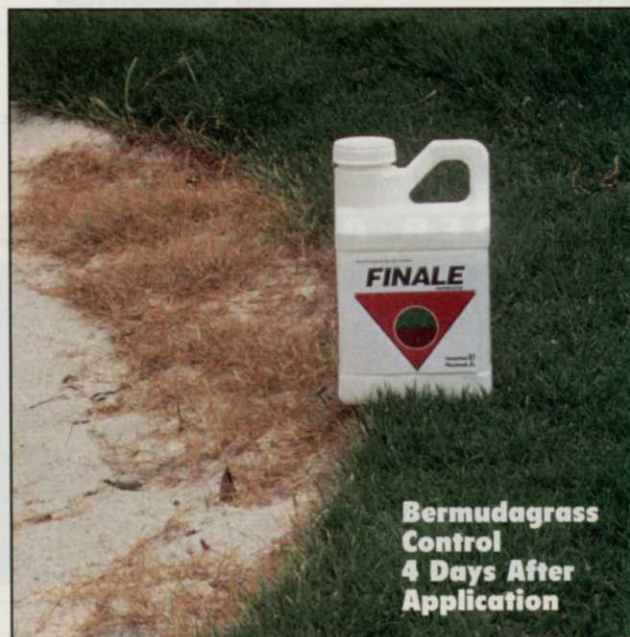
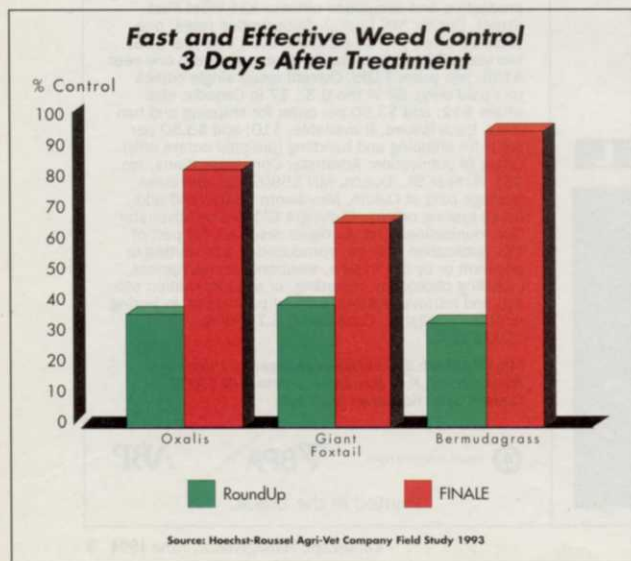
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ASK THE EXPERT

DR. BALAKRISHNA RAO



Best time to collect maple syrup

Problem: When is the best time to collect maple syrup? What are the conditions which maximize sap flow? (Massachusetts)

Solution: Dr. Roger Funk, vice president of human and technical resources for The Davey Tree Expert Co., offers the following:

In Massachusetts, the sap flow occurs from October to April, if freezing nights are followed by warm days. It ceases if temperatures are consistently above or below freezing, and it starts on the south side of the tree. Most sap flows occur between 9 a.m. and 12 noon.

Maple sap contains sucrose, small amounts of glucose, inorganic salts, nitrogenous compounds such as peptides and amino acids, amylases, and unidentified organic constituents. Sugar comes from starch, which is converted by enzymes and then secreted into xylem.

The flow seems to be caused by stem pressure. This is produced by rising temperatures followed by low—but not necessarily freezing—temperatures. Another possible explanation is that carbon dioxide accumulates in intercellular spaces during the day. This would cause pressure that forces sap out of wounds at night, when carbon dioxide is absorbed.

Reducing the pressure would cause water to move upward from the roots which would then refill the xylem vessels.

Product review: Pendulum herbicide

Problem: We are a small landscaping company. One of our employees mentioned that a product called Pendulum can be used for weed control in landscapes. Can it be applied over the landscape plants? (Michigan)

Solution: Pendulum is a pre-emergence herbicide from American Cyanamid Co. It is available as Pendulum WDG (water dispersible granular) formulation. Its active ingredient is called pendimethalin.

Pendulum herbicide is labeled for use on top of and around many established ornamental plants. It is labeled for a number of trees, shrubs, flowers, budding plants and groundcovers, and is active against many grasses and several broadleaf weeds. It prevents weeds from emerging as they germinate.

Pendulum is also labeled for use in non-crop areas, such as utility right-of-ways.

Read and follow label specifications for additional information and better results.

Sand, nutrients will improve athletic turf

Problem: Will fertilizer or lime improve the turf on a football practice field? How about adding round sand before coring to help increase the rooting zone? (New York)

Solution: Based on soil test results and as needed, fertilizer and lime can be used when trying to improve turf on football practice fields.

Adding sand before coring would not be as beneficial as adding

it after coring. By adding sand after coring, there is a greater chance for the sand particles to fall into the aerification holes.

Reports suggest that adding medium to coarse sand (0.25 to 1.2 mm in diameter) is useful when trying to reduce compaction and increase root depth.

Continued use of sand could lead to layering or the development of a soil interface.

Guidelines for firmly-rooted sod

Problem: Last year we repaired a number of lawns which were severely damaged by insects or diseases. We used sod as a means for fast recovery. The problem is that it is not rooting very well. What can be done, and how can we avoid the problem in the future? (Michigan)

Solution: Poor rooting of newly-sodded turfgrass may be due to several factors, such as lack of sufficient moisture, soil interface or improper soil preparation at planting.

After installing the sod, you must provide sufficient moisture during establishment. The edges of sod pieces, if not sealed properly, can lose excessive moisture during high temperatures.

In addition, most sod is grown on muck soils, and when placed on clay-type soil without good soil preparation, interface problems can develop. The difference in soil types results in incompatibility, causing poor penetration and surface runoff whenever watered. This affects proper rooting.

Prior to sod installation, the soil should be tilled and prepared. At this time, it is easy to incorporate phosphorus, a needed element for root development.

Similarly, any pH correction should be done at this time.

In the future, make sure the soil is prepared properly for root penetration, and sufficient moisture is provided during the establishment period. The areas showing poor rooting can be helped by core aerifying in fall or early spring. If possible, aerify annually for faster results.

Dr. Balakrishna Rao is Manager of Research and Technical Development for the Davey Tree Co., Kent, Ohio.

Mail questions to "Ask the Expert," LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. Please allow two to three months for an answer to appear in the magazine.

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GREEN INDUSTRY MUST GET INVOLVED

QUICK - READ:

- ▶ It will be **incredibly expensive** to harness new supplies of fresh water—particularly to fulfill demands created by turfgrass irrigation during droughts—because of newer federal regulations. And our demand for water will double in 20 years.
- ▶ **Xeriscapers** single out the industry as 'the bad guy,' using way too much irrigation water for way too much turfgrass.
- ▶ Dr. James Beard says that xeriscapers have spread **inaccurate and misleading information** about landscapes and lawns, and about the amounts of water they need and use.
- ▶ **Water-wise councils** are separate from water utilities although utilities are represented on them. The green industry carries equal weight.
- ▶ Says Dr. Beard: What's wrong with **tan or brown turf** during droughts if one chooses not to irrigate or the water is not available?

■ Somewhere in the United States it hasn't rained. The calloused hands of a water utility worker tighten the valves on the green industry's access to public water.

Whether you're a grower, landscape contractor, golf course superintendent or lawn care company owner, your access to public water (more likely that of your customers) could be restricted. The utility could turn off the spigot.

That's why it's vital that you understand how your services fit into the local water supply picture, and that you participate in community water-use decisions. And it must be done before a drought and its resulting water restrictions.



Advocates of xeriscaping have been accused of singling out the green industry as 'the bad guy,' the water waster.

Begin by learning two terms: "Xeriscape" (a trademarked term) and "water-wise." They crop up in discussions surrounding the politics of water.

Xeriscape has been around since 1981, starting in the arid Southwest. It's now recognized nationally, even in Florida where it's law for all water utilities. Texas, too, passed Xeriscape legislation with, sources say, little input from the green industry. The U.S. EPA in 1993, in fact, published a brochure describing and advocating it.

Xeriscape focuses almost exclusively on water-conserving landscapes. This makes some in the green industry uneasy. They say it singles out the green industry as "the bad guy," the water waster. Specifically, they say it puts too much blame on turfgrass.

"The idea of (water) conservation landscaping wasn't new by any means," says Ken Ball, conservation specialist with Denver Water. "What was new was calling it by some catchy, creative name and putting together a systematic approach to getting people involved in the process.

"There seems to be more resistance to the word from some professionals than from the lay person. Actually, it doesn't matter what you call it. Xeriscape represents sound horticultural principles."

Some people in the turfgrass industry instead called it "zeroscape," implying that it advocated zero irrigation of landscapes. Supporters insist it doesn't. Nor did it ever. Even so, to some turfgrass managers it still means cacti, scrub and rocks—landscapes with little or no turfgrass.

The wrong info—Some turfgrass experts still see it as a threat.

Dr. James Beard, an influential turfgrass expert, maintains that Xeriscape supporters have spread inaccurate and misleading information about landscapes and lawns, and about the amounts of water they need and use. This, he has claimed at several turfgrass conferences, leads to unwise and unfair regulations limiting the amount of grassed property owners can have. Or it leads to rulings restricting turfgrass irrigation.

"Statements have been made, such as all turfgrasses are higher water users than trees and shrubs," Beard said at the 1993 International Turfgrass Conference in Palm Beach, Fla. "There is no scientific data available to support this statement. The few comparative water use studies that are available indicate that trees and shrubs are higher water users than turfgrasses."

Xeriscape proponents confuse the public further, claimed Beard, by providing lists of

IN WATER-USE DECISIONS

plants that may be drought resistant but aren't necessarily low water users. Mechanisms for controlling a plant's water-use rate and drought resistance are entirely different, he stressed.

"I'm not against trees. I'm just saying, if you're going to be legislating the use of plant materials, let's base it on sound scientific fact," said Beard.

Xeriscape supporters, indeed, have redefined their views on turfgrass, now allowing that it has a place in water-conserving landscapes. Even so, they believe that way too much turfgrass is receiving way too much irrigation water, specifically potable water.

Dollars and sense—Both sides argue about the total amount of water used in turfgrass irrigation. But just about everyone concedes that it's usually drawn from a utility when demand for water generally is greatest—when it's hot and dry.

This creates unacceptable expense, explains Fox McCarthy, who was hired by Cobb County-Marietta (Ga.) Water Authority in 1989 to help the green industry develop water-conserving practices.

During the 1988 drought in Atlanta, for instance, McCarthy's utility was fined \$75,000 for exceeding its permit limits during peak water use. Much of this peak use resulted from turfgrass watering, which worries water utility officials. They maintain that harnessing new supplies of fresh water, particularly to fulfill demands created by turfgrass irrigation during droughts, will be incredibly expensive as a result of newer federal regulations.

"If we can cut off those peaks, that would

give us up to 15 percent of our demand in the future," says McCarthy. "Demographic studies tell us our demand for water is going to double in 20 years."

Part of the answer is evident, says McCarthy: conservation.

A larger effort—Enter the concept of "water-wise" that seems to be more acceptable to segments of the green industry than Xeriscape. That's because water-wise encompasses almost every aspect of water conservation, the inside of homes and businesses as well as lawns/landscapes. Xeriscape is often just one part of this larger conservation effort.

The Georgia Water Wise Council was started in 1989, a year after the drought hammered Atlanta's green industry, causing millions of dollars in losses because of irrigation restrictions.

"The green industry really took a hit here in Atlanta," recalls McCarthy, who saw that the water utilities and the green industry didn't trust each other. Over a period of months that changed though, he explains—particularly after the formation of Georgia Water Wise Council and subsequent face-to-face meetings between utilities and industry.

Councils like this are separate from water utilities, although utilities and the green industry carry equal weight on them. In fact, representatives from utilities and the green industry alternate as presidents of the council.

"The utilities and the green industry professionals are getting to know each other, and that's why it's working," claims McCarthy. The Georgia Water Wise Council spawned a similar council in Florida this past year.

Another in Texas is being considered.

Changing perceptions—Although utilities and the green industry (usually turfgrass) strongly disagree on the appropriateness of turfgrass irrigation, both realize the greater problem lies with water misuse.

"This is really a people issue," says Dr. Doug Welsh, a cooperative extension agent in Texas and a longtime Xeriscape proponent. "What we have to do is change people's attitudes about water. We did it 20 years ago with 'Don't Be a Litterbug,' and now people don't throw trash on the highways."

Welsh believes that the industry should educate customers to accept periods when their turfgrass is brown and dormant. "You can have a nice lawn in most of the East and never have to irrigate," he says, "if you can perhaps put up with a couple weeks of brown."

Beard, in fact, has made similar statements. "What's wrong with tan or brown turf during droughts if one chooses not to irrigate or the water is not available, rather than the alternative of getting rid of the turf and planting trees?" he said at the Ohio Turfgrass Conference in 1992.

Proponents and skeptics of Xeriscape, indeed, agree that turfgrass itself isn't necessarily a water waster, but people sometimes are.

"When an area gets plenty of rain, it's not the turf's fault that people are watering. It's people's fault," claims Welsh.

"Basically, in most situations it's man who's wasting the water through improper irrigation practices and landscape design," said Beard at Ohio Turf.

"The publicity and legislation devoted to water conservation through reductions in turfed areas is extraordinarily out of proportion to the much more significant water waste in metropolitan water districts," he added.

And, in spite of fundamental differences of purpose, both heartily agree that the green industry—specifically turfgrass—*must* become involved in local water-use decision making.

—Ron Hall

THE SEVEN XERISCAPE GUIDELINES

■ Bruce Adams is the water conservation coordi-

nator for south Florida. This might seem ridiculous. Few areas in the U.S. receive more than south Florida's average of 55 inches of rain annually. Few are as lush and green. After all, much of the Everglades is in the South Florida Water Management District (SFWMD).

Adams, though, insists that the seven principles of Xeriscape

fit as well in arid Southwest.

"Sure, we have 50-plus inches of rain, but we also have about 45 inches of evapotranspiration each year too," says Adams. Most of the rain falls in the summer, not in the winter when tourists

fit as well in south Florida as they do in the

continued on page 10

return and water demand balloons. Also, some of the precipitation arrives in 3- to 50-inch cloudbursts. The rain soaks well below Florida's sandy soils, or cascades off roofs and pavement to be collected in ditches and whisked to the ocean via canals.

The SFWMD, in fact, attempts an incredible balancing act. Using sophisticated weather-monitoring equipment, SFWMD specialists electronically manipulate a spiderweb matrix of canals and gates to move excess rain from communities. Yet it must also maintain groundwater levels to keep the Atlantic Ocean's salt water from invading aquifers.

This is vital because 98 percent of south Florida's fresh water supply comes from groundwater.

In truth, south Florida cannot capture and retain its abundant rain so that when the area receives less 10 or 12 inches below its normal annual amount—as it did in 1989 and 1990—shortages develop. This leads to irrigation restrictions for landscapes and turfgrass.

But, maintains Adams, not all lawns or landscapes suffer similarly because of the restrictions.

"Any person who practices Xeriscape landscaping and has an efficient irrigation system, and has segregated their plants by water needs, and maintained them properly—these people laugh at the restrictions," he says. "They're barely bothered."

Taking the lead from the SFWMD, other water districts in Florida have begun promoting Xeriscape through the Florida Water Wise Program.

Adams, past president of the now-defunct Xeriscape Council and an instructor at Florida Atlantic University on water-conserv-

ing landscapes and the opportunities they provide the green

- 1) Plan your landscape.** Understand the nature of the land and its water demands.
- 2) Improve the soil.** Build up sandy soil with compost and maintain it by periodically returning organic matter.
- 3) Irrigate efficiently.** Irrigate turf areas separately from other plantings. Group plantings according to similar water needs.
- 4) Use turf wisely.** Locate turf only in areas where it provides functional benefits.
- 5) Use drought-tolerant plants.** Considering exposure to the sun, choose the right plant for the right place in your yard.
- 6) Use mulches.** Mulches limit weed growth and retain moisture.
- 7) Maintain your landscape properly.** Proper mowing, pruning and weeding, limited fertilization, pest control and irrigation system use save water.

—R.H.



1994

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LM REPORTS

Tips for seeding with overseeders

Work can be done manually, but seeders and overseeders make the job more time-efficient.

■ By following a few well-established seeding procedures, a turfgrass manager improves the likelihood of establishing a strong stand of turfgrass. This is equally true for golf courses, football fields or home lawns.

The Guide to Seed & Sod in the United States and Canada by Dr. Richard Hurley and Marie Pompei of Lofts Seed offers the following seeding tips:

1) Prepare a good, crumbly seed bed: till 6 to 8 inches deep. Firm and level well after tilling.

2) Fortify the seed bed with fertilizer and lime. A soil test is the surest way to establish proper rates. Make applications uniformly, work into top 3/4 inches of soil.

3) After all materials have been worked in, firm up the soil by rolling.

4) With a wide-toothed rake or tine-harrow, rake the area into a crumbly state with about an inch of loose soil at the surface.

5) Apply the seed.

6) Lightly rake the seed into the soil. Seed needs to be bedded in the soil to germinate quickly and uniformly.

7) Optional mulching with straw or salt hay is beneficial, especially on sloping areas to hold soil and seed in place in heavy rain or during watering.

8) In the absence of rain, the newly seeded area should be watered 2-3 times daily.

Fortunately, turfgrass managers don't have to



The Bluebird International seeder holds about 20 lbs. of seed.

Befco models fit tractors from 26-60 hp and 18-40 hp.



Overseeding, pesticide injection or fertilizing can be done with the Dol overseeder.

do all this work manually. They can look to help from the manufacturers and suppliers of an assortment of seeders, some small enough to seed the tiniest lawns, others able to easily seed acres in a day. (See accompanying chart.)

Check with your seed supplier for recommended seeding rates. Different varieties of turfgrass require different rates.

—Ron Hall



Hahn's VCS-1 holds 750 cubic inches of seed.

Bunton models seed at 9 mph, with accurate control of seed flow.



PROFESSIONAL TURFGRASS SEEDERS

Company	Model	Features
BEFCO INC. Circle No. 301	Green-Rite II and III	Model I: one-pass, multipurpose seeder, aerator, for tractors from 25-60 hp. Model II: overseeder, aerator, 58" work width, 18-40 hp tractors.
BLUEBIRD INTERNATIONAL INC. Circle No. 302	3 Lawn Seeders	Walk behind, 5 hp or 7 hp B&S; seed hopper holds about 20 lbs. of seed; openings line up with Delta Reel blades.
BRILLION IRON WORKS INC. Circle No. 303	Turfmaker	11 models from 5'4" to 12' seeding widths; feed rolls fluted; precise metering of fine seeds; high-strength rollers; big capacity boxes.
BUNTON CO. Circle No. 304	BL0S59-DD, BL0S79-DD	59" and 70" widths; controls seed rates very accurately; individually mounted coulters; large hopper; can seed at 9 mph.
CUSHMAN RANSOMES RYAN Circle No 305	Mataway Overseeder/Dethatcher	Heavy-duty snap-out reels; adjustable seeding two-inch spacing; seed flow stops automatically when crossing sidewalks and driveways.
DAVENPORT SEED CORP. Circle No. 306	T-7II Multi-Purpose	Hand-operated broadcast spreader for pros; direct drive; full-view flow control knob; stainless interior parts, interior agitator.
DOL BROTHERS LTD. Circle No. 307	301 (48") and 210 (72")	5-in-1 turf solution: overseeding, pesticide-insecticide injection, fertilizer application, polymer granule placement, detaching/aerating.
EMREX, INC. Circle No. 308	Verti-Seed	For 17 hp tractor; PTO driven; 33" working width; 3 cu.ft. hopper; adjustable for all turf seed; smooth cutting discs, 21 elements.
GANDY CO. Circle No. 309	Dethatcher/Overseeder	For tractors 18 hp and up; cutter blades on 2-inch spacing; hopper capacity 125 lbs.; snap-off stainless bottom & slide; 24 seeding outlets.
GARBER SEEDER Circle No. 310	Seed Easy Seeders	PTO tractor, electric ATV broadcast seeders.
HAHN, INC. Circle No. 311	VCS-1 Verti-Cut	Seeder attachment: 750 cubic inches, 20-gauge sheet steel, agitator, hopper on/off controls.
JACOBSEN Circle No. 312	Aero King 1321	21-inch seeding/verticutting width; covers 23,000 sq. ft. per hour; double-bin seeder for separate varieties; vertical mowing/dethatching.
LAND PRIDE Circle No. 313	Overseeders, Primary Seeder	48" & 72" Overseeders, 72" Primary Seeder; metering for turfgrass seeds; adjustments for seeding depth, rates; roller pressure or tickler line pressure; all-welded steel box.
LESCO INC. Circle No. 314	Renovator 20	Seeder/slicer/dethatcher; 20" working width; compact; two full-width finishing brushes; spring-loaded reverse.
SPYKER SPREADER WORKS Circle No. 315	Walk behind seeders/spreaders	Dial-A-Matic rate control; vibrating rate gate; rotary agitators; frames finished in baked-on epoxy enamel.
WORKSAVER INC. Circle No. 316	Broadcast seeder/spreaders	Polyethylene and metal hoppers available; electric and PTO-driven; several sizes.

Source: LM mail/phone survey, April 1994

Are you assuming customers are happy?



After servicing a property, prepare a report for the customer.

Photo courtesy Senske Lawn & Tree Care

by Ed & Todd Wandtke

■ Customer satisfaction requires regular confirmation. Most companies, however, do not take the time; rather, they "assume" the customer likes the job because he or she is paying the bill.

Now that the spring rush is over, take the time to check up on how well you are meeting your customers' expectations of your services.

You don't have to be a mind reader to understand what the customer wants. You do need to ask the right questions. And expectations will vary by the type of customer and the way a property is being used. Until you learn what the customer wants from your service, it will be difficult to measure if you are delivering it.

Here are some tips you should consider, depending on the type of service you offer, and to whom you offer it.

Commercial customers:

1) Review your customer sales records first. Dig into them to find the objective the customer had in choosing you and the type of service he or she expects you to perform. Under ideal conditions, this information should be evident from sales contacts or from written information given to you when you obtained the bid packet.

You might have to look carefully, though: more than 90 percent of the companies we have observed in the last five years do not have this information in their customer contact or sales files. If you have this information on file, congratulations—you're one of the elite 10 percent.

2) Plan site visits. Call the person who's contracting the job and plan to walk the property with the buyer and your contact. This is an opportunity to obtain immediate feedback on the quality of your service.

Let the customer know that this is part of your continuing customer relationship and satisfaction pulse check.

Some companies provide a checklist for the customer to complete, and then compare it to the one they complete at the same time. Then, stop and discuss variances between your two views.

3) Provide written reports and feedback. Provide a report on the property after every visit. This lets the customer know what problems you see. Either the customer or you can follow up on your appropriate recommendations.

Don't be afraid to critique your own shortcomings. The customer likes to know that you see the same problem that might be troubling him or her.

Include comments on curb appeal, turf

color, plant and tree appearance, groundcover, weed control, mowing patterns and flower beds. Add comments on trash, turf renovation, plant placement and irrigation needs also often helps increase the value to the customer of the written report.

Residential customers:

Unlike commercial customers, residential customers will frequently phone when they have a concern. Effective handling of the ensuing service call is critical in maintaining a satisfied customer. Here are some other tips:

1) Communicate. Talk to your customer each time you service the property. This means that your service personnel must be prepared with questions for the property owner, and the questions need to be open-ended (not just "yes" or "no").

Don't expect customers to be specific unless you ask the right questions. You can expect to get three questions in, before the customer loses interest.

Employees need to be trained as effective listeners. After contact with a customer, a written form should be prepared. Act on any follow-up items and keep the form in the customer's file.

2) Survey customers. Enclose a reply card asking for comments. When few replies are received, the company believes that customers are satisfied.

Or, hire a professional research firm to contact customers for you. These professional researchers can ask questions that provide information about specific customer attitudes. This method can also provide insight into ways you can expand your service offerings.

The cost of an outside group to perform the survey will range from \$2,500 to \$5,000, depending on the number of questions and the number of customers to be surveyed.

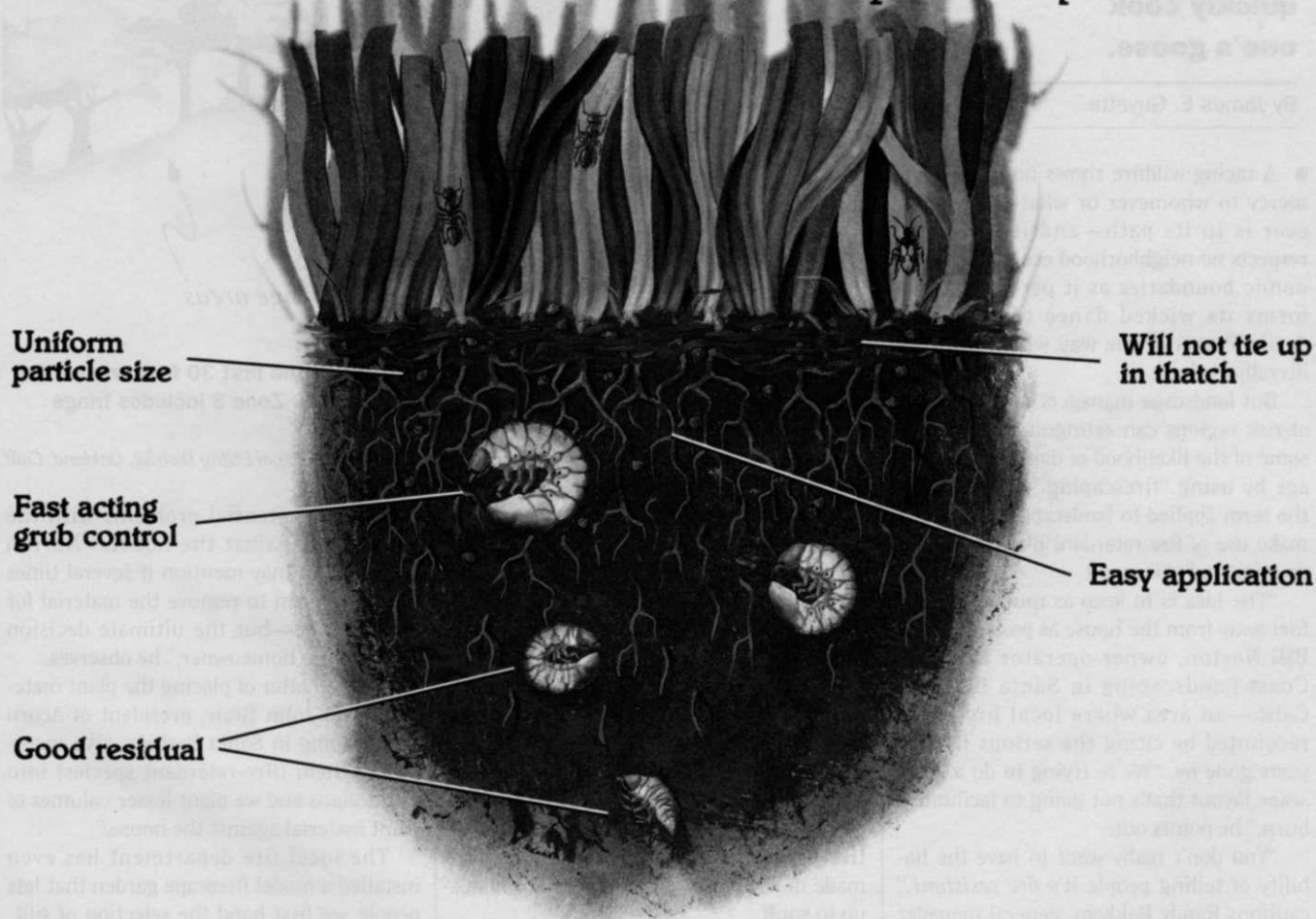
3) Phone check-ups. Customers are not always available when the services are being performed. Call them (within a reasonable time after the service) for input. These calls can be made by the service person, or by an office employee. If timely, the check-ups can save a customer or resolve a problem before it becomes a crisis.

Customer retention levels continue to increase for companies that have implemented these few tips, which will help you earn customer loyalty.

—To contact the authors for more information about this and other business subjects, write Wandtke & Associates, 2586 Oakstone Dr., Columbus, OH 43231; or phone (614) 891-3111.

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Circle No. 102 on Reader Inquiry Card

'Firescaping' an extra hedge from damage in dry, dangerous weather

Landscapers and homeowners often make unwise planting decisions. A seemingly simple choice of gardening strategy can quickly cook one's goose.

By James E. Guyette

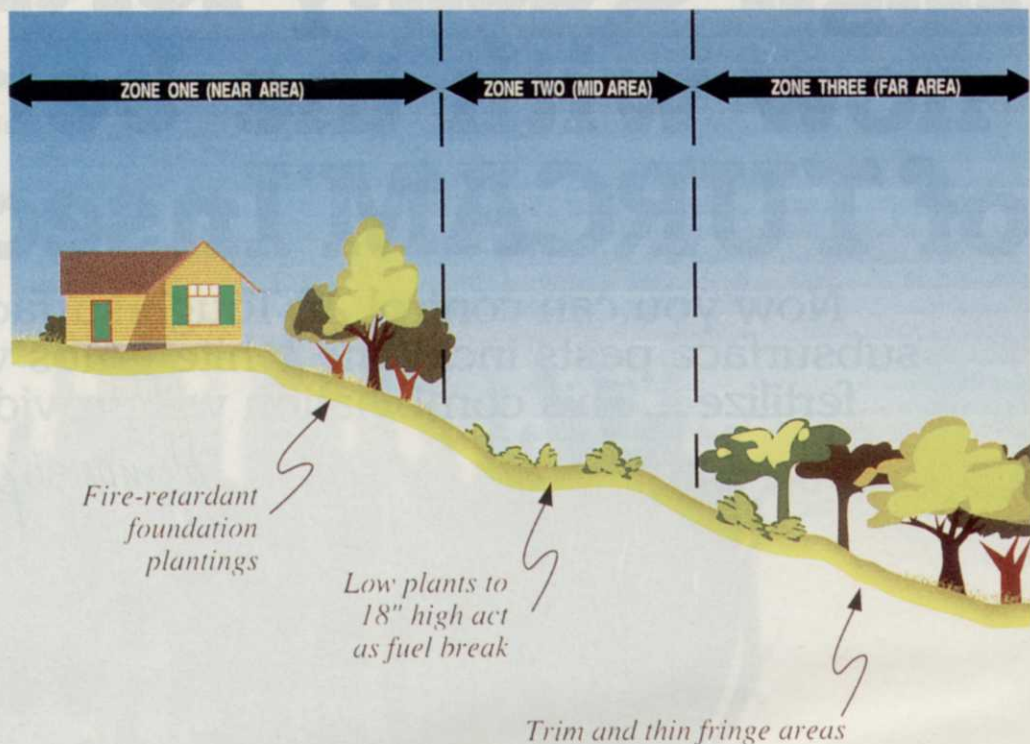
■ A racing wildfire shows no mercy to whomever or whatever is in its path—and it respects no neighborhood economic boundaries as it performs its wicked dance of death. Plants in the way will literally explode.

But landscape managers in at-risk regions can extinguish some of the likelihood of damage by using "firescaping"—the term applied to landscape designs that make use of fire-retardant plants, prudent pruning and placement.

"The idea is to keep as much potential fuel away from the house as possible," says Bill Norton, owner-operator of South Coast Landscaping in Santa Barbara, Calif.—an area where local history is recounted by citing the serious fires of years gone by. "We're trying to do a landscape layout that's not going to facilitate a burn," he points out.

"You don't really want to have the liability of telling people it's *fire resistant*," cautions Randy Baldwin, general manager at Santa Barbara's San Marcus Growers. "What you are doing is recommending plants that are less likely to carry the fire."

The specific species can vary in any given situation, but in general a fire-retardant plant will have a high moisture content and its growing pattern will hug the ground. Oddly enough, often a plant that's fire-retardant will also be drought-resis-



Fire protection 'zones' may reduce or prevent damage. Zone 1 is the first 30 feet around the house. Zone 2 covers the next 30-to-70 feet away from the house. Zone 3 includes fringe areas adjacent to wildlands or open space.

(Chart materials page 21 and this photo originally produced by the East Bay Municipal Utility District, Oakland, Calif.)

tant. "Most of your succulents are very efficient water users," says Baldwin.

"You have to embrace the whole concept of low-fuel and proper pruning" when selling such a service to residents, Baldwin notes. "No one really calls up and says, 'Give us your firescape mix,' but interest does pick up after a fire."

Money to burn—While the mostly upscale housing stock in rugged Santa Barbara adheres to stringent fire-resistant design requirements mandated by authorities, these construction aspects can be made moot in a moment if the yard is not up to snuff.

"Landscapers and homeowners are the biggest abusers" when it comes to making unwise planting decisions, says Norton. A seemingly simple choice of gardening strategy can quickly cook one's goose when the sky gets black with smoke.

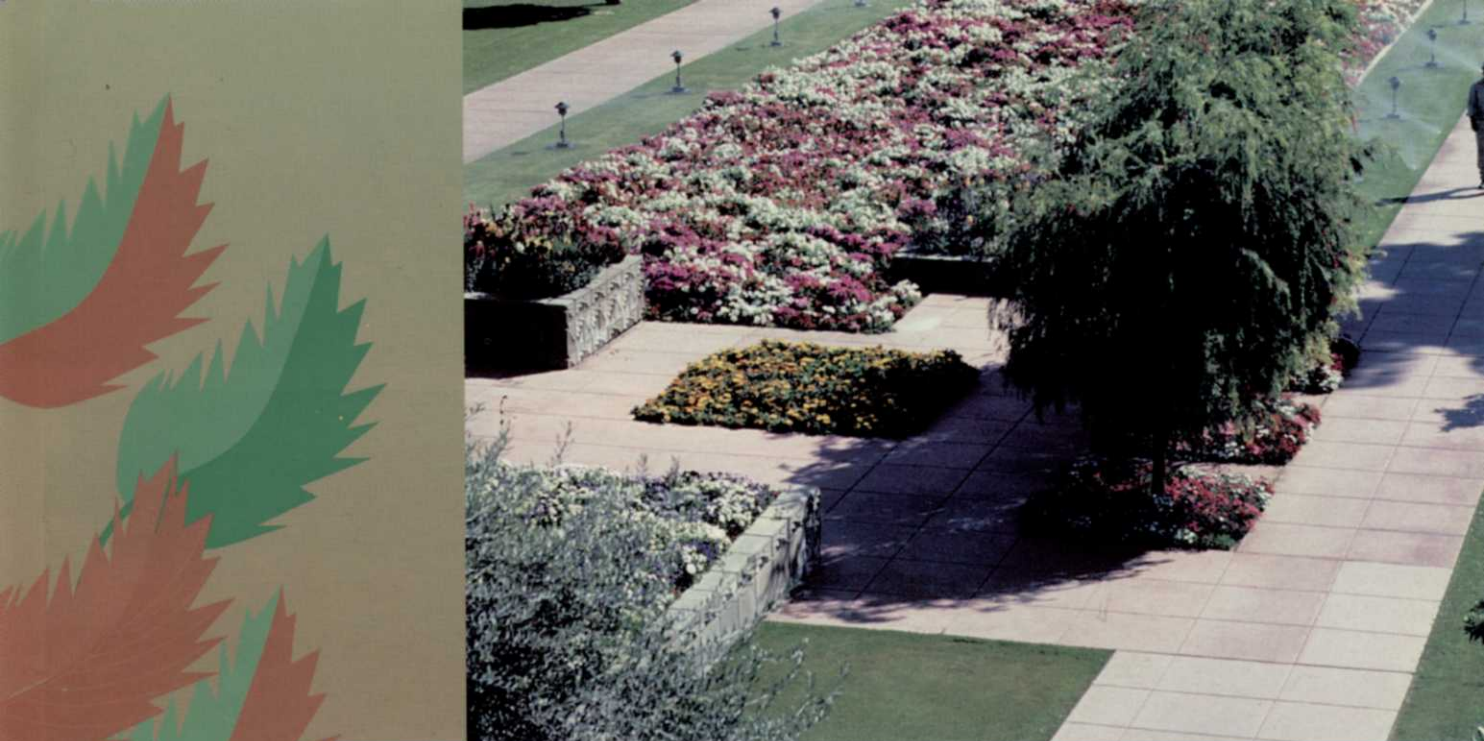
Landscape managers in any fire-prone region need to make this a priority. "Even in our maintenance practices we discuss

and reveal potential problems with the foliage up against the house," Norton reports. "We may mention it several times and urge them to remove the material for safety's sake—but the ultimate decision lies with the homeowner," he observes.

"It's a matter of placing the plant material," says John Brair, president of Acorn Landscaping in Santa Barbara. "We incorporate them (fire-retardant species) into our designs and we plant lesser volumes of plant material against the house."

The local fire department has even installed a model firescape garden that lets people see first-hand the selection of suitable materials. Four zones are mapped out over a 200-foot line. Zone One is closest to the house and Zone Four the farthest away. Zone One stretches 30 feet. (From 30 feet away, a wildfire can ignite a piece of furniture setting behind a window inside a house.)

Pumping up—Selling this preventive *continued on page 21*



LANDSCAPE MANAGEMENT

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MERIT 75 WSP insecticide is a new broad-spectrum, systemic insecticide that is extremely effective at very low use rates. It offers less risk to applicators, man and the environment. Imidacloprid, the active ingredient in MERIT, delivers superior season-long control of turf and ornamental insects without the need for repeated applications. *Circle No. 161 on Reader Inquiry Card*

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MANAGEMENT



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Circle No. 165 on Reader Inquiry Card



KUBOTA GF1800 FRONT MOWER

The 4WD GF1800's unique two-pedal 2WD/4WD change-over process allows the operator to switch between drives by stepping on either the 4WD Lock Pedal or 4WD Release Pedal. The GF1800 provides exceptional turn performance and boasts a turning radius of 17.3 inches. With the bevel-gear 4WD system in the rear axle, the GF1800 delivers a constant driving force and smooth power transfer to the wheels, even during sharp turns.

Hydrostatic transmission eliminates shifting, with speed and forward/reverse changes controlled by the same single foot pedal. The GF1800 4WD features an 8.4-mph maximum forward traveling speed and an 4.1-mph maximum reverse speed. The GF1800 offers a choice of three shaft-driven, off-set mowers: a 48-inch mulching rear-discharge mower, 54-inch side-discharge mower or 60-inch side-discharge mower. Circle No. 169 on Reader Inquiry Card



JOHN DEERE FRONT MOWER

The 20-hp F725 is powered by a liquid-cooled Kawasaki overhead valve engine for quiet operation, consistent performance in hot weather, and long engine life. With a 54-inch mower deck, it can improve productivity by 20 to 50 percent. The 17.5 hp model F710 is air-cooled and teamed with a 48-inch mower. Both units include industry exclusive—hydrostatic transmission controlled by two foot pedals; hydraulic weight transfer system to improve traction of the drive wheels; differential lock; and a single crank handle to adjust cutting height. Power steering is standard.

Circle No. 166 on Reader Inquiry Card

MILL CREEK MANUFACTURING COMPANY

A line of tow-behind coring aerators has been introduced by Millcreek Manufacturing Company. Available for the 36" and 54" wide economy models and the 42", 63" and 84" wide heavy-duty models.

The heavy-duty models can be raised and lowered from the tractor seat by a mechanical device — no hydraulics needed.

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ROUNDUP® DRY PAK HERBICIDE

The proven weed control performance of Roundup® herbicide is now available in a convenient, granular formulation in pre-measured packs that offer fast, easy and accurate mixing. Each packet of Roundup® Dry Pak contains enough herbicide for 1 gallon of finished spray solution. Dry Pak is ideal for use in backpack sprayers for applications around trees, along fence lines, around buildings and next to sidewalks. Roundup® Dry Pak comes in boxes of 25 packs, making it convenient to store, transport and ration out to workers. For more information about Dry Pak, see your herbicide supplies or call Monsanto Company at 1-800-332-3111 for the name of a local dealer/distributor.

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new products 1995

LANDSCAPE MANAGEMENT



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Primo®, a turf management tool from Ciba, reduces turf growth by 50% for up to four weeks. Labeled for warm-and cool-season grasses, Primo saves you time—mowing is faster and/or less frequent. Primo reduces clipping, makes grass denser and darker color green. For more information, contact your local distributor.

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Powered by 21.2 cc engine, it removes limbs quickly, easily and safely. The blade provides an extremely smooth cut to help protect trees from disease and moisture. It cuts on both the forward and reverse stroke for faster cutting. A hook allows the user to pull down stubborn cut branches. The 71-inch, heavy-duty shaft is the ideal length from a balance and reach standpoint. This new unit is only 11.3 pounds. For more information contact Echo Incorporated, 400 Oakwood Road, Lake Zurich, Illinois 60047.

Circle No. 173 on Reader Inquiry Card



LOFTS, INC.

Southshore Creeping Bentgrass, available from Lofts Seed, was developed through a breeding program of Dr. Richard Hurley, Lofts' Research Director, in cooperation with Rutgers University. Southshore produces a dense, upright turf and exhibits a medium-fine texture that produces less grain. In NTEP trials, Southshore displays excellent resistance to brown patch and excellent overall turf quality.

Circle No. 170 on Reader Inquiry Card



LESCO'S LCR-7400 COMMERCIAL ROTARY MOWER

Steep hills or wet conditions are no problem for the LCR-7400, which features automatic or full-time four-wheel drive. Powered by a proven and reliable Perkins 27 HP diesel, the LCR-7400 has a two-speed transmission with differential lock. Independent turn-assist brakes allow tight radius turns with minimal turf damage. Its high-lift deck easily clears curbs and simplifies transport. Its 60- or 72-inch deck flips vertically, making it easy to service. For a demonstration contact your LESCO Sales Representative or call (800) 321-5325 (in Cleveland, 333-9250).

Circle No. 174 on Reader Inquiry Card

PLANTS WITH SOME FIRE RESISTANCE*

FIRE continued from page 16

type of landscape design and maintenance plan is largely an untapped resource that only sparks attention when fire strikes. Sadly, the people most likely to be hit by fire are those who can afford to spend a little extra money ahead of time.

"It tends to be the large lots out on the fringes," explains Susan Van Atta of Van Atta & Black Landscape Architects in Santa Barbara. "These are the 'view' properties, so it's in the high-end developments where the fires occur," she adds.

"There's a marketing opportunity here, but you have to know what you're doing," Van Atta adds. "There's a lot of opportunity for maintenance work and there's a lot of labor to be sold with the proper application of expertise."

Where there's smoke—Expertise is the key

Landscape managers must always be alert for changes in the conventional wisdom of fire prevention.

word. "There are a lot of wrong ways but no one right way," Van Atta warns. "You need to educate yourself a lot because it's still evolving. There's tremendous variability, so the solutions each time won't be the same."

After each fire, authorities investigate and try to offer measures that will water down the chances of a repeat disaster, and thus landscape managers must always be alert for changes in the conventional wisdom of fire prevention.

Wind, humidity and temperature combine with topography, water flow and just plain old bad luck in determining who gets burned and who doesn't. "In the old days they used to just keep things cut low and remove all the existing vegetation," Van Atta recalls. "But that creates a tremendous scar on the hillside. Without the trees and vegetation, you don't have wind protection or erosion protection."

A landscape manager can provide a valuable service to customers in fire-prone areas by helping to prevent more serious losses. "Maybe it's not something that you can make a living from, but you can sure earn a lot of credit by educating people," Norton notes.

"You really have to educate people," Van Atta stresses. "After a while, people seem to forget, but your biggest sales pitch is what people see in the newspaper and on the news."

—The author is a freelance writer based in South Euclid, Ohio. He specializes in the green industry.

*A partial list. Growing conditions in yards and maintenance techniques and

timing affect the relative fire-resistance and drought tolerance of plants. Those which generally have some fire-resistance are noted, as well as those which may suffer freeze damage inland. Spp. indicates more than one species is commonly grown.

R = Some fire-resistance F = May freeze inland

TREES

	Genus/species	Common name
R	<i>Arbutus unedo</i>	Strawberry tree
R	<i>Ceratonia siliqua</i>	Carob tree
R	<i>Cercis occidentalis</i>	Western redbud
R	<i>Cercocarpus betuloides</i>	Mt. Mahogany
R	<i>Quercus agrifolia</i>	Coast live oak
	<i>Pistacia chinensis</i>	Chinese pistach
R	<i>Rhus lancea</i>	African sumac

GROUNDCOVERS

	Genus/species	Common name
RF	<i>Aloe spp.</i>	Aloe
R	<i>Arctotheca calendula</i>	Capeweed
R	<i>Armeria spp.</i>	Sea pink
R	<i>Coprosma kirkii</i>	Prostrate mirror plant
RF	<i>Drosanthemum floribundum</i>	Ice plant
R	<i>Duchesnea indica</i>	Mock strawberry
RF	<i>Dymondia margaretae</i>	
R	<i>Festuca rubra 'Creeping'</i>	Creeping red fescue
R	<i>Fragaria chiloensis</i>	Wild strawberry
R	<i>Liriope gigantea</i>	Giant turf lily
	<i>Mahonia repens</i>	Creeping Oregon grape

SHRUBS

	Genus/species	Common name
	<i>Arctostaphylos spp.</i>	Manzanita
R	<i>Atriplex spp.</i>	Saltbush
	<i>Berberis spp.</i>	Barberry
	<i>Ceanothus spp.</i>	California lilac
R	<i>Cistus spp.</i>	Rockrose
R	<i>Cotoneaster spp.</i>	Cotoneaster
R	<i>Escallonia spp.</i>	Escallonia
R	<i>Feijoa sellowiana</i>	Pineapple guava
R	<i>Galvesia speciosa</i>	Island bush snapdragon
	<i>Garrya elliptica 'Evie'</i>	Garrya
	<i>Gaura lindheimerii</i>	Gaura
R	<i>Heteromeles arbutifolia</i>	Toyon
R	<i>Nerium oleander</i>	Oleander
R	<i>Pittosporum spp.</i>	Mock orange
R	<i>Prunus ilicifolia</i>	Holly-leaved cherry
R	<i>Prunus lyonii</i>	Catalina cherry
R	<i>Punica granatum 'āna'</i>	Dwarf pomegranate
R	<i>Pyracantha 'Santa Cruz'</i>	Pyracantha

Staffing a family business: going outside of the nest?

Failure to address work-related issues, like organization, is often overlooked when relatives are involved.



Erven:
a good craftsman might not be a good foreman.

By James E. Guyette

■ Owners of family businesses find that it sometimes pays to look outside the family when selecting top staffers. At least according to Dr. Bernard L. Erven, professor of agricultural economics and rural sociology at Ohio State University.

The major reason third-generation businesses fail is because succeeding family members are thrust into roles that they either dislike or are simply unable to perform adequately, Erven points out. This problem also holds true for beginning family enterprises.

"We are choosing managers from too small a pool," he cautions. "They may be great kids, but they may not be landscape managers. They don't line them up at the hospital and say, 'I pick that one—he looks like a landscaper.'"

Owners of family businesses need to match the employee's talents with the job. If a match is not being made, look for alternatives, Erven urges. Don't set your relatives up to fail by putting them in a position that doesn't work.

Even those who are solidly motivated may have certain attributes that don't obviously match the management job at hand.

The family business owner needs to get a handle on this and make the appropriate adjustments.

"The best craftsman will often not be the best foreman," Erven observes. A crackerjack craftsman may have little patience with non-craftsmen, and will gain no satisfaction in watching others reach success—and both of these qualities are needed in a manager. If your craftsman lacks these attitudes, have him or her remain a craftsman and hire someone else to do the bossing.

Failure to address these work-related issues can bring strife to family relations, Erven warns: "If my sister didn't marry my brother-in-law, I wouldn't have these problems, so it must be my sister's fault."

Organization is often overlooked when relatives are involved. "When you mix family and business, you bring the family problems and the business problems together and you complicate them," Erven explains, adding that these problems may not even be apparent to outsiders. Yet this can get you into trouble.

A sample family business organizational chart may look like a spider web, with no clear definition of who does what. A long-term employee may still not follow instructions issued by someone who supposedly is in charge. "He still has not accepted the son—who was 12 years old when he started working there," says Erven.

Another common family business organizational chart looks like a sunshine with rays poking out. One person is in the middle: "My way, my business," Erven points out that although the trend in today's business world is to decrease middle management, often there's way too little middle management in a family business. The test? "Do your employees stand around in the morning

waiting to be told what to do? That's the 'me' approach."

If your organizational chart looks like soap bubbles, it represents things being done "our way" with nobody being in charge. Chaos reigns. Under such a circular system, employees seeking a favor will keep asking each family member until one says yes. Customers seeking answers are left frustrated and annoyed.

Erven presents five principles for a successful family business:

1) Someone must be in charge. This comes in handy even in the most smoothest operations. "A person higher in the organization handles exceptions to the usual."

2) Decentralization. "We want to push decisions down to the lowest level possible. Do you have *managed workers* or *working managers* in your business?" Erven asks. The top boss's quietest day should be on the busiest day of the business—because that boss's time will have been dedicated to planning—not putting out fires.

Most decisions should be made at lower levels, he says: "You may be saying, 'Wait a minute, Bernie, you don't know the people I have working for me.' Then we get into hiring practices..."

3) Parity principle. Authority should be equal to responsibility: "One of the major frustrations of a small business (employee) is being given responsibility without authority."

Employees need to know who's in charge, what are the rules, and will they be enforced.

4) Span of control. Supervise no more than five people in a given situation.

5) Unity principle. Nobody reports to more than one supervisor. "In family businesses this is very important," Erven stresses. "Many employees in a family business keep asking people until they get what they want."

It can cost you good workers, too, who become annoyed at the frustrations involved. "Always ask yourself, is it fun to have more than one supervisor?" The answer, Erven contends, is a resounding no. "I've had employees (of family businesses) tell me that they worked there for two weeks before they knew who their supervisors were."

A successful family business must be organized, Erven explains. Failure to do so invites strife among the workers and a negative impact to the bottom line. "Management doesn't have its house in order, and then we blame the employees because they don't know what we're thinking."

—James E. Guyette is a freelance writer specializing in the green industry. He is headquartered in South Euclid, Ohio.

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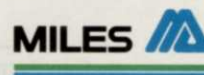
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When should you EXPAND

...When you have the



resources, when you see potential, and when you're not needed in one place every day.

by Dan Sautner
Padgett Business Services

CASH FLOW STATEMENT

	Pre-opening	1st mo.	2nd mo.	◆◆◆	12th mo.	Total
Service	-0-	850	1050		3800	31000
Products	-0-	25	75		350	2200
Cash in	-0-	875	1125		4150	33200
Expenses:						
Accounting	-0-	100	100		100	1200
Advertising	250	350	400		250	3600
Bank fees	25	25	25		25	325
Maintenance	-0-	25	35		45	250
Memberships	250	250	25	◆◆◆	0	250
Other	250	250	250		125	2000
Rent	-0-	1000	1000		1000	12000
Supplies	-0-	75	100		100	1300
Telephone	-0-	55	55		60	755
Utilities	-0-	100	100		100	1150
Wages	500	1050	1300		1400	18225
Cash pd.out	1025	3055	3390		3205	41055
Cash from operations	-1025	-2180	-2265		945	-7855
Opening cash	-0-	10,975	8445	◆◆◆	2350	-0-
+/- Cash from operations	-1025	-2180	-2265		945	-7855
Less:						
Equipment buys	15000		1000			17000
Deposits	2000					2000
Supply inventory	2500					2500
Loan payments	-0-	350	350		350	4200
Leasehold improvements	3500					3500
	23,000	350	1350	◆◆◆		29200
Plus:						
Bank loans	10,000					10000
Owner contributions	25,000					30000
	35,000	-0-	-0-		-0-	40000
CLOSING CASH	10975	8445	4830		2945	2945

■ If you're considering opening a second office, take stock of your present location first. Answer the following questions:

- ✓ Have you developed internal operation systems?
- ✓ Do you have a staff person strong enough to replace your every-day contributors?
- ✓ Does the company generate more income than you must personally remove from it?
- ✓ Does your present location operate in excess of 75 percent of capacity?

If all four answers to the questions are "yes," your house is probably in order. So next examine the basic financial considerations in deciding to expand. Here are some tools you will need:

1) Monthly financial history of your present location from start-up to present.

2) Summary of initial capital required by the first location. Break it into:

- equipment;
- leasehold improvements;
- initial supplies and inventory;
- start-up staffing costs; and
- working capital.

The financial history will give you an excellent idea of how the new operation will develop. You can draw from an established growth pattern and you're also able to estimate costs as they will occur. You did not have this in your original start-up.

The second tool also gives you an edge. It tells you how much equipment will be needed, along with other costs of the pre-open-

ing—how much capital is required to launch your second shop. The working capital amount can be calculated by working out how long the first location took to generate positive cash-flow.

Now you can start developing estimated cash flows for the second shop. Using the historical data you have, along with knowing how not to make the same mistakes the second time around, estimate how much money and time is needed for the second location to stabilize.

To do this, set up a simple work sheet to create a cash budget for the new operation, as shown on page 26.

You now also have something to give to your banker when you need to borrow the money. Finally, this work sheet provides you a good idea of what your own financial contributions to the new venture will be.

Be sure to consider the cost sharing between the two locations. While inventory, for example, needs to be in both places, the

storage may be centralized. Labor costs will not be dramatically reduced, but you will have some flexibility in temporarily transferring some support staff between the two locations. Things like equipment costs and utilities tend to have no overlapping benefits, while areas such as advertising and printing can be easily shared.

On the whole, don't overstate the benefits of two locations. The second location will also cause some costs that a single location does not have, like increased management time. Another will be increased wage costs because you'll need another manager.

Look to yourself as well. Your methods of management will have to change. Decisions will have to be made not based on direct observation, but rather through third-party reporting. Anything casual about your accounting and financial reporting must end. Stricter policies of cash handling and management will have to be enforced.

Expansion into a second location is both dangerous and rewarding. Other factors to consider:

- What made your first location great may have been your presence. Consider this carefully.

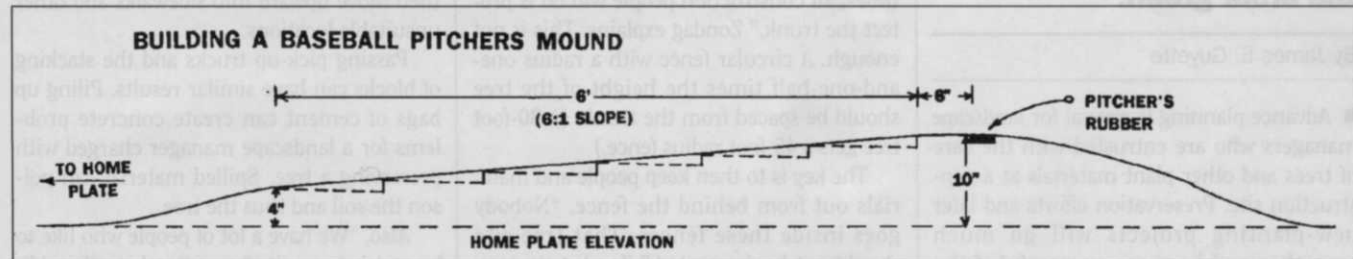
- Make sure that you have the necessary financial resources. A new location will be cash-flow drain and may take some time to turn positive.

- There is also the outside chance that there may be a downturn in business at your first location. Plan for these contingencies and have enough financial resources to see it through.

The benefits of expansion are increased sales, increased personal equity and a feeling of accomplishment.

—Dan Sautner is chairman of Padgett Business Services, Athens, Ga. For more information, phone (706) 548-1040.

A pitch for safer pitchers mounds



■ The pitchers mound is the focal point of any baseball infield, but most don't get enough maintenance. In fact, says Joseph Motz, mounds on most ball fields, strictly speaking, probably don't even meet specifications. This is particularly true on fields used by recreational or amateur leagues.

Motz, president of the Motz Group and Motz Sports Turf, says baseball rules stipulate that a pitchers mound be 10 inches higher than the home plate area. Usually they're not, more typically erring on the high side. "Sometimes you have to deal with individual coaches as to what height they might like them to be, and they can get quite high," says Motz.

This may not even be apparent to batters because some of the height of the mound is "hidden" in the slope of the infield, says Motz. When the infield is flat—like on artificial turf—the mound is perceived to be higher.

A higher mound, or even the batter's perception of a higher mound, aids the pitcher. But an improperly designed or poorly maintained landing area in front of the mound may handicap a pitcher's performance or even injure him. The landing area is the unturfed area in front of the pitching rubber where the pitcher's feet end up after the delivery of the pitch.

"The landing area is critical for safety," says Motz. "Most landing areas, because the mounds are built higher, tend to be steeper than they should be." How steep should they be: starting six inches in front of the pitcher's rubber there should be a slope of 1 inch per foot for six feet. The landing area, should have the same contour no matter the height of the mound, dropping 6 inches in the 6 1/2 feet directly in front of the rubber.

In building, repairing or maintaining the landing area, as well as the batters boxes Motz recommends using a special "virgin"

clay which resists kick-out. The remainder of the mound can be built of a special mix consisting of three parts clay and one part sand. Elsewhere on the infield, a ballfield mix of 75 percent sand, 15 percent clay and 10 silt is preferred.

Because most athletic field managers can only dream about their "field of dreams," they must add soil amendments on site to improve play and safety. They don't have budgets allowing them to mix recipe soils off site.

Motz says he doesn't think enough calcined clay is incorporated into most fields. He says when calcined clay is tilled 2 to 3 inches into the infield it provides players with a firm but "corky" footing, and significantly better surface water management.

Motz made these and other sports turf suggestions in a presentation at the most recent Ohio Turfgrass Conference.

—Ron Hall

Early arrival at job site prevents damage to trees

Trucks, concrete, soil compaction, collisions. Fencing in trees and advising workers can keep the arbor green.

By James E. Guyette

■ Advance planning is crucial for landscape managers who are entrusted with the care of trees and other plant materials at a construction site. Preservation efforts and later new-planting projects will go much smoother and be more successful if the building crews are enlisted to cooperate with the task from the beginning.

"If you're landscaping a construction site, you'd better get there early enough to lay down the law to the construction workers," says Randy Zondag, extension agent for commercial horticulture/natural resources development in Lake County, Ohio.

Directing construction workers can require some delicate social skills, and it certainly helps to have the developer take an active role, he says. "Take your customers for a walk and show them what happens."

Zondag suggests you point out the trees that are being marked for saving, and note how the roots and other features can be harmed if the proper procedures are not followed. The developer should then notify the crews that you'll be on-site and issuing instructions.

One of the most basic techniques for saving a tree is simply erecting a fence. "Many



Older trees are less tolerant of abuse than younger trees.

times, all construction people will do is protect the trunk," Zondag explains. This is not enough. A circular fence with a radius one-and-one-half times the height of the tree should be spaced from the trunk. (A 30-foot tree gets a 45-foot radius fence.)

The key is to then keep people and materials out from behind the fence. "Nobody goes inside these fences. That tree site should not be desecrated," Zondag stresses. In addition to being the first thing up, "the fence should be the last thing taken down when the contractor leaves the site."

Penned in—The fence issue is more important than it might seem because trees hold such an attraction for contractors. A tree can serve as an umbrella for protecting bags of cement or stacked bricks and wood; and it makes a handy garage for parking vehicles. The damage done is usually not obvious at the time. "A tree doesn't die right away—it takes time for a tree to die," says Zondag. While a lot of people think the opposite, "the older the tree is the less it can tolerate."

Soil compaction can be the No. 1 enemy of a tree. According to Zondag, 90 percent of the roots that absorb nutrients are within the top four inches of soil.

Compaction means less air and pore space, less water-holding capacity and increased mechanical resistance. Roots can

then move upward into sidewalks and other unsuitable locations.

Passing pick-up trucks and the stacking of blocks can have similar results. Piling up bags of cement can create concrete problems for a landscape manager charged with preserving a tree. Spilled material can poison the soil and thus the tree.

Also, "We have a lot of people who like to burn debris on-site," says Zondag. "In addition to harming the top of the tree the ash will alter the chemistry of the soil." Even burying empty cement bags can shift the pH level and either kill the tree or mandate soil replacement efforts.

Covering up—Debris should be carted off-site if any type of planting program is planned.

"Trash at construction sites is a critical problem down the road for landscapers," says Zondag. Many times plants will refuse to thrive atop a long-forgotten underground trash heap. A favorite burial spot for contractors is right along the structure's foundation—right about where most people want their gardens.

—James E. Guyette is a freelance writer specializing in the green industry. He is based in South Euclid, Ohio.

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Drought tolerance of turfgrass

■ Landscapers, lawn care operators and golf course superintendents must often maintain acceptable turf with limited amounts of water. This is especially true in arid and semi-arid regions. Various approaches are used to conserve water, including the use of grasses that need only naturally available water and those that can be managed with reduced irrigation.

Many grasses can be grown in dry areas of the western United States without supplemental water. However, most of these are not well suited for finely-manicured areas because they grow too tall or produce a bunchy and open turf.

In cool areas with good soils and at least 15 inches precipitation per year, drought-tolerant Kentucky bluegrass cultivars, once established, will usually persist, and produce acceptable turf in the spring and fall. Under dry conditions, bunch-type turfgrasses, including perennial ryegrass and hard fescue, often show exceptional short-term drought tolerance. However, with extended drought, these

Species selection is the key to healthy, low-water-use, attractive lawns and landscapes.

species tend to thin and do not provide acceptable turf quality.

Among the drought-tolerant grasses that can do well on golf course fairways and roughs are buffalograss and bermudagrass, both low-growing, sod-forming, warm-season species. For roughs and out-of-play areas, several additional grasses—including blue grama and inland saltgrass (warm-season species), and western and fairway wheatgrass, smooth brome grass and Russian wild ryegrass (cool-season species)—are fairly well adapted to limited supplies of water. Continued research may provide the refinements which will allow these grasses to become more widely used.

Another management approach is to

use limited irrigation. Watering in the summer to supply about 70 to 80 percent of potential evapotranspiration (ET) will normally provide acceptable turf from cool-season grasses.

The frequency of irrigation is also important. For example, irrigating Merion Kentucky bluegrass at two- and four-day intervals produces better turf than the same amount of water (50 to 75 percent of potential ET) applied at 14-day intervals.

continued on page 32

Pre-conditioning lawns

■ A lawn that is deprived of moisture for 45 days will typically suffer a 20 percent loss, and it will most likely turn a dormant straw color, but it probably isn't dead. After several days of moderate temperature and moisture, re-growth will begin, with visible results about two weeks after the dormancy is broken. It may take three to four weeks for severely drought-stricken lawns to fully recover, but they usually will, in time.

Here is how landscapers, golf course superintendents, lawn care operators and even homeowners can pre-condition their lawns for drought:

- Apply recommended amounts of turf fertilizer in the spring.
- Mow with sharp blades. Dull blades create more stress on the plant and cause it to require more moisture.
- Raise mowing height and reduce mowing frequency. Greater leaf surfaces allow the plant to store more water, and the leaves shade the rootzone from drying heat and evaporation.
- Water infrequently but deeply in the mornings or evenings to establish deeper rooting systems. To determine when to water, probe the soil to four to six inches deep; when the soil is dry or the probe is difficult to insert, it's time to water.
- Avoid excess traffic, which causes more stress.

—American Sod
Producers Association

Watering instructions

- Make sure your clients know how to save water while keeping their lawns looking their best. Here are some suggestions, whether in a hot, dry spell or not:
 - Water early in the morning to reduce evaporation.
 - Water the lawn separately from trees, shrubs and groundcovers, if possible.
 - Have thatch removed in spring if it's more than one-half inch thick. Thatch should not be removed in the heat of the summer.
 - Control weeds. They compete for water, light and nutrients.
 - Fertilize moderately, applying at the low end of recommended rates.
 - Keep your lawn at the right mowing height, a minimum of 1.5 inches for tall fescue, perennial rye and Kentucky bluegrass, a minimum of 0.5 inch for bermudagrass, zoysia-grass and St. Augustinegrass.
 - Have the lawn aerated as necessary to prevent compaction and to allow water to move more freely into the soil. Clay soils in particular need regular aeration.

—University of California

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*Consult your operator's manual for safety instructions when mowing hills.

Drought-tolerant varieties

■ Select grasses according to the nature of the area to be covered, water availability and effect desired. For any of the lawn grasses to produce an aesthetically pleasing turf, supplemental water must be applied. Generally, grasses should be considered high water requirement plants, but drought tolerant turfgrasses are becoming increasingly available.

Here are National Turfgrass Evaluation Program (NTEP) ratings of various commercially-available varieties, grouped by cultivars. These are the highest ratings in each group of trials, with no statistical differences evident. Please note that most ratings are based on limited site evaluations. All are from NTEP 1992 progress reports.

BUFFALOGRASS (wilting)		Morning Star.....8.0	Merit.....4.0
315.....9.0		Navaho.....8.0	Opal.....4.0
609.....9.0		Quickstart.....8.0	Ram-1.....4.0
Bison.....9.0		Target.....8.0	
Buffalawn.....9.0		Topeka.....8.0	KENTUCKY BLUEGRASS
NE 84-378.....9.0		Prizm.....8.0	MEDIUM-HIGH MAINT.
Sharps Improved.....9.0			(dormancy)
BUFFALOGRASS (dormancy)		KENTUCKY BLUEGRASS MEDIUM-HIGH MAINT. (wilting)	Barzan.....5.0
609.....8.2		Eagleton.....8.7	Glade.....5.0
Texoka.....7.8		Barmax.....8.3	Ronde.....5.0
315.....7.2		Monopoly.....8.3	Indigo.....4.7
Plains.....7.2		Silvia.....8.3	Marquis.....4.7
Bison.....7.0		A-34.....8.0	Merit.....4.7
Sharps Improved.....7.0		Indigo.....8.0	Viva.....4.7
		Blacksburg.....7.7	KENTUCKY BLUEGRASS
PERENNIAL RYE (dormancy)		Challenger.....7.7	LOW MAINTENANCE
Nighthawk.....8.7		Classic.....7.7	(recovery)
Patriot II.....8.7		Freedom.....7.7	Monopoly.....6.3
Pebble Beach.....8.7		Nustar.....7.7	Banjo.....5.0
Sherwood.....8.7		Preakness.....7.7	Alene.....4.7
Affinity.....8.3		Suffolk.....7.7	S. Dakota Cert.....4.7
Envy.....8.3			Barzan.....4.7
Stallion Select.....8.3		KENTUCKY BLUEGRASS LOW MAINTENANCE (dormancy)	Kenblue.....4.3
Accolade.....8.0		Fortuna.....5.0	Nustar.....4.3
Achiever.....8.0		Voyager.....5.0	TALL FESCUE
Advent.....8.0		Merion.....4.7	(recovery)
Barrage.....8.0		Unique.....4.7	Hubbard 87.....6.3
Caliente.....8.0		Banjo.....4.3	Phoenix.....6.0
Brightstar.....8.0		Amazon.....4.0	Adventure.....5.7
Competitor.....8.0		Barzan.....4.0	Chieftain.....5.7
Cutter.....8.0		Bronco.....4.0	Guardian.....5.7
Gator.....8.0		Chelsea.....4.0	Jaguar II.....5.7
Goalie.....8.0		Destiny.....4.0	Monarch.....5.7
			Sundance.....5.7
			Willamette.....5.7
			Winchester.....5.7

Athletic field soil is a key to avoiding injuries

by Henry Indyk, Ph.D.

■ Consider athletic field soil conditions from two major perspectives: the best possible growth situation for the turf, and the basis for player safety.

For optimum turf growth, soil conditions must be suitable from both chemical and physical standpoints.

Chemical conditions include pH, nutrient status, level of salt concentration and contaminants.

Physical conditions include soil texture, infiltration and percolation, drainage, and susceptibility to compaction. From the standpoint of safety, add field grade and contour, evenness or levelness, existence of

Modified topsoil root zone mix. A 10-inch layer is spread over the subgrade showing one of the drainage lines.



depressions, and undesirable debris.

Assessing conditions—Know what's wrong before you take any action. Soil conditions must be assessed to analyze existing situations properly. This must be done by someone with knowledge and background in soils, someone who knows what to look

for and how to judge conditions accurately.

A great deal can be determined by visual observation during a site visit: physical conditions including soil texture, drainage, levelness, contour, grade, depressions, percentage of debris and existing turf condi-

continued on page 34



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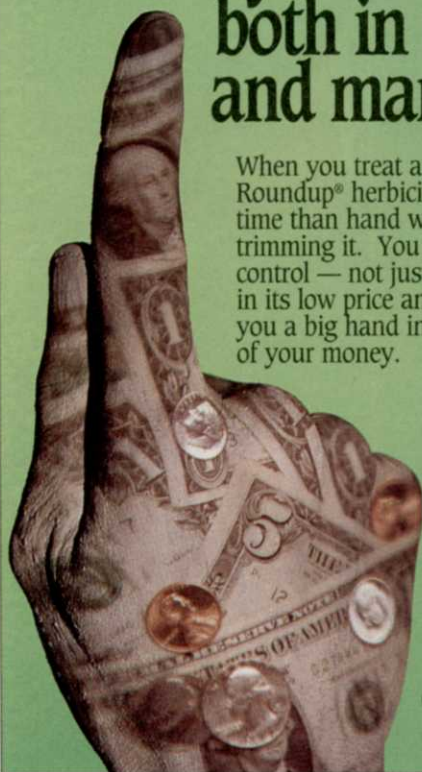


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IND-47080 2/94

Circle No. 123 on Reader Inquiry Card

ATHLETIC SOIL from page 32

tions (density, evenness and vigor). Even hardness can be determined to some degree, though for best accuracy a physical measurement of hardness can be taken with an impact machine.

The site visit includes soil sampling for a laboratory quantitative assessment of chemical and physical characteristics. Take soil samples according to field variability, pulling some samples from each area with variations. From 10 to 20 samples should be taken. Gather them with a soil sample tool to a depth of at least six inches.

Combine and thoroughly mix the collected samples in a clean container. By testing the samples together, rather than testing each sample individually, results will reveal a composite of the entire field.

Send air-dried samples to a qualified, reputable laboratory for chemical testing and physical analysis.

Chemical testing should include levels for soil acidity (pH) and the major nutrients of phosphorus and potassium, and calcium and magnesium. If the field is in an area where micronutrients are normally deficient, test for these also.

Physical analysis should include mechanical analysis for sand, silt and clay proportions. This will help predict the ability of the soil to infiltrate and percolate water, its drainage characteristics, water-holding capacity, and its compaction susceptibility. Information gained from this analysis can be fortified with other laboratory determinations, such as sand

fractionation, bulk density and percolation rate.

Visual assessment and lab test results combined provide useful information on the existing status of the field.

Corrective procedures—It's vital to know what the soil profile conditions should be for the growth and support of a dense, vigorous and healthy natural turf sports playing surface in order to determine what needs to be done to get there.

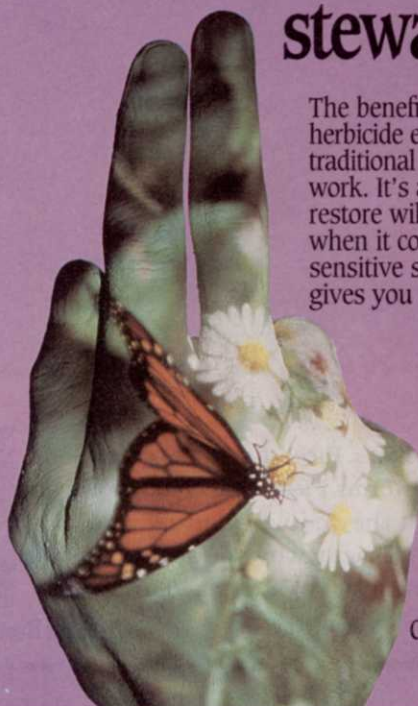
Corrections in the chemical area will be based on the results of the laboratory analysis and are generally issued in prescription form by the lab. For example, use v amount of x material to alter the y level by z amount.

The proper pH levels for favorable turfgrass growth range between 6.0 and 7.0 with 6.5 being ideal. High pH—alkaline conditions—require acidifying; low pH—acidic conditions—must be neutralized. Sulphur compounds correct alkaline conditions; lime corrects acidity. The farther pH levels range from the ideal, the harder it will be to correct pH conditions for the proper establishment and maintenance of turfgrasses.

Lab prescriptions also spell out the amount and type of corrective materials to be applied according to specific nutrient deficiency levels.

In spite of pH and nutrient levels, high salts or other contaminants can affect turf growth. Contaminants may be due to misapplication of chemicals, or the result of leaks or spills. Excess salts may also come from contaminants. They may build up in coastal regions when areas are inundated with brackish water during flooding. In the Southwest, natural salt levels may be great enough that salt crusts appear on the soil surface.

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range (1.0 mm) down to the fine range (0.25 mm). Little—10 percent or less—of the sand should be in the range above very coarse or below very fine.

Depending on available sand sources, silica sand is preferred to calcareous sand, which normally carries a high pH.

Drainage problems—One can go through all the steps of rebuilding the soil, doing everything ideally, so that the soils are chemically and physically on target, grade the field, sod or seed, and have the field look beautiful until the first big rain. Then problems may appear: what happened with all of the expended energy and cost in rebuilding the soil?

Modification of the upper layer of soil, no matter how great the depth, is not the solution to a drainage problem unless the subsoil is such that it allows drainage, which is a rare solution. Essentially, what is above the subsoil, with good physical characteristics that allow percolation and infiltration, is then impeded by the subsoil barrier which causes water to back up.

An internal soil drainage system is needed to correct subsoil drainage problems, allowing the modified field media to function properly.

Rebuilding the soil requires "in depth" homework. Know what you have, where you want to go, and what you need to get there—and test every step of the way.

—Dr. Henry Indyk is turfgrass agronomist for Turfcon, the professional consultation branch of The Greenway Group, Horsham, Pa. He was extension specialist with Rutgers for 30 years. Indyk is secretary of the national Sports Turf

Salt concentration is measured easily with a conductivity test. Using water to leach out excess salts can be a long, time-consuming process. The water to be used also must be tested for salt levels. Gypsum can be used to accelerate the leaching process. In some cases where high salt levels exist, it may be necessary to replace existing soils. The new soils must be tested also, before changes are made.

Though a visual assessment gives a qualitative analysis of physical conditions (the sand:silt:clay ratio), it should always be backed up with a laboratory mechanical analysis to establish quantitative proportions. In addition to this mechanical analysis, a sieve analysis, also known as a sand fractionation analysis, should be conducted.

The sieve test separates and grades sand particles by specific sizes: very coarse, coarse, medium, fine and very fine. If the sand component is predominantly in the fine/very fine range, the small particles can fit together so closely that the sand functions more like silt and clay and their restriction on the rapid infiltration and percolation of water required for suitable athletic field soils.

Corrective procedures to improve filtration, percolation rates and compaction resistance require soil modification to change the physical make-up of the soils. To be effective, these modifications must incorporate the right amount of the right quality of sand. The critical factor is testing of the sand for particle size, pH, and salt index prior to use. There's no point bringing in sand that has problems of its own.

Stipulate sand fractions with 90 percent in the coarse

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Circle No. 123 on Reader Inquiry Card

GOLF 'SCAPING

Flowers add COLOR CLOUT

The best arrangements add excitement and reflect the mood and colors in the surrounding landscape.

by Steve & Suz Trusty

■ Flowers add something extra to high visibility areas on the golf course.

Traditionally, the most flower-intensive spot on a course has been the clubhouse entrance.

Thereafter, most of the course is trimmed in shades of green, with grasses and trees or native vegetation that form the backdrop for the rough areas.

Rob Sawyer is principal of Land Concern, Limited, Santa Ana, Calif., which concentrates on marketing and merchandising solutions for residential areas. According to Sawyer, colorful focal elements and visual relief from color add to

the golfers' day, and to the players' estimation of course maintenance.

Some planting tips:

- Plant most flowers in areas where golfers tend to spend most of their time. Such a time/space relationship gives you the chance to strengthen the message that the course is well-managed and aesthetically pleasing.

- The strongest focal points are around the tee box, about 200 yards out from the tee and around the green.

- Other flower bed locations could be key spots on the cart path, but not along the fairways and other areas golfers merely "pass by."

- In tournament or outing play, there is usually a staging area. By need, there's a great deal of hardscaping in this location to accommodate the cart lineup. However, attention to detail and some added beauty



The area surrounding the tee box is one of the strongest focal points on the entire golf course.

Combine annuals and ornamental grasses for an exotic and colorful impression.

will pay off if players spend an hour in that area as they wait for play to begin.

- Players may also spend 20-30 minutes at the food service area after the first nine, perhaps more than at the clubhouse.

- Finally, there's the cart drop-off area. Depending on the crowd, people may spend more time there than any other spot on the course. The last impression of the course shouldn't be of washed-down carts and battery chargers.

- Golfers come to the course seeking a break from the day's routine. They're enthusiastic, they want to get to the game.

Bright, intense colors arranged in structured, flowing patterns mirror and enhance that mood. As play winds down around the 17th and 18th holes, soft colors and less-structured, more carefree designs add to the sense of relaxation, making the round of golf a more satisfying experience.

Remember, flowers can clash with each other just like a poorly chosen wardrobe. Mariam Tate, owner of Mariam Tate Co.,

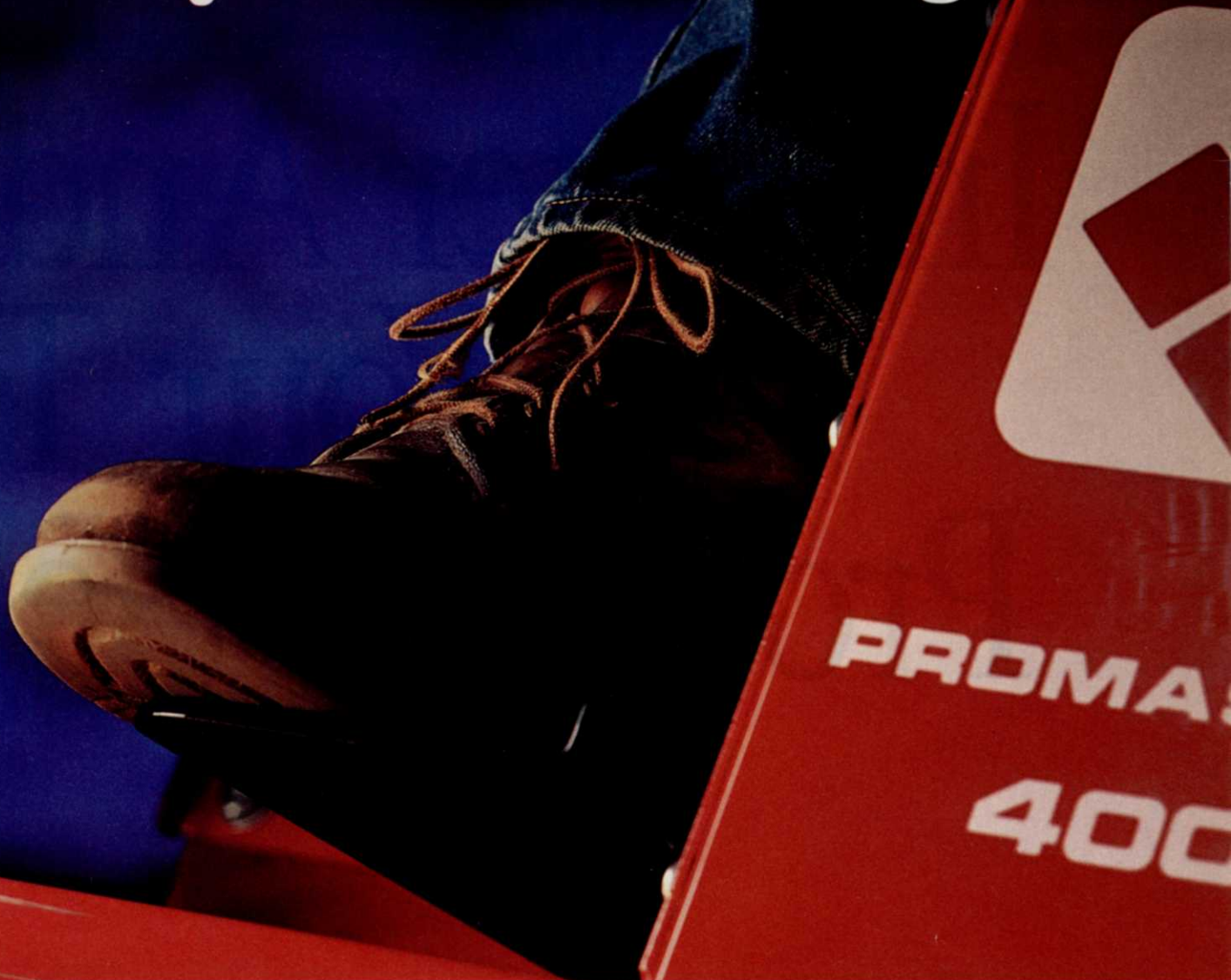
continued on page 40

ELSEWHERE

Exclusive survey confirms color use, page 40

Planting, culture of selected annuals, page 42

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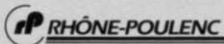
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Circle No. 125 on Reader Inquiry Card

COLOR from p.36

an architectural color consultant firm in Irvine, Calif., says some flowers are too bright, too stimulating for the surroundings.

Tate is also a member of The Color Marketing Group, an international, non-profit association of design and color professionals, located in Alexandria, Va. She suggests:

- Dusky purples, car-amels and reds will pick up the sunset, any nearby rock outcroppings and evening shadows of a mountain view.

- For coastal areas, consider copying the colors of the water, the sunrise, the beach sand and rocks.

- Courses in the Southwest may use

the desert as master palette. There, the colors are many: sunrise and sunset; bright blossoms; subtle, cool colors from the sand, native cactus and sage brush.

- Sawyer stresses seasonal color as well as annual hues. Seasonal color with perennials and flowering shrubs can generate favorable impressions with less maintenance.

- Don't forget green. Build on shades of green, layering hues of light and dark, or using variations in the blue-green or yellow-green palette. Use perennials with variegated leaves, and add tones of white, yellow, pink or red.

Annuals, of course, are high maintenance choices, and may need lots of water,

depending on the varieties chosen.

Plant annuals where care can be provided easily and economically. Borders of annuals around—or in—a portion of permanent beds may make for a good mix.

Try red and white petunias by the clubhouse, deep pink impatiens by the ninth hole turn. But change them the next year.

For a final lesson, play your course or a neighboring one. Where does the course look weak? What views and combinations are most striking? Take notes—photos if you can—and use them for guidance.

—The authors are freelance writers specializing in the horticultural field. They work out of their office in Council Bluffs, Iowa.

LM survey says flowers more popular than ever at nation's golf courses

One super-intendent LM talked to says he buys 200 to 300 flats each year at a cost of between \$6 and \$7 per flat.

■ It's no longer unusual to find flowers in and around the nation's golf courses. Virtually all the golf course superintendents—97.8 percent, actually—surveyed by LANDSCAPE MANAGEMENT magazine admit to having them on their courses.

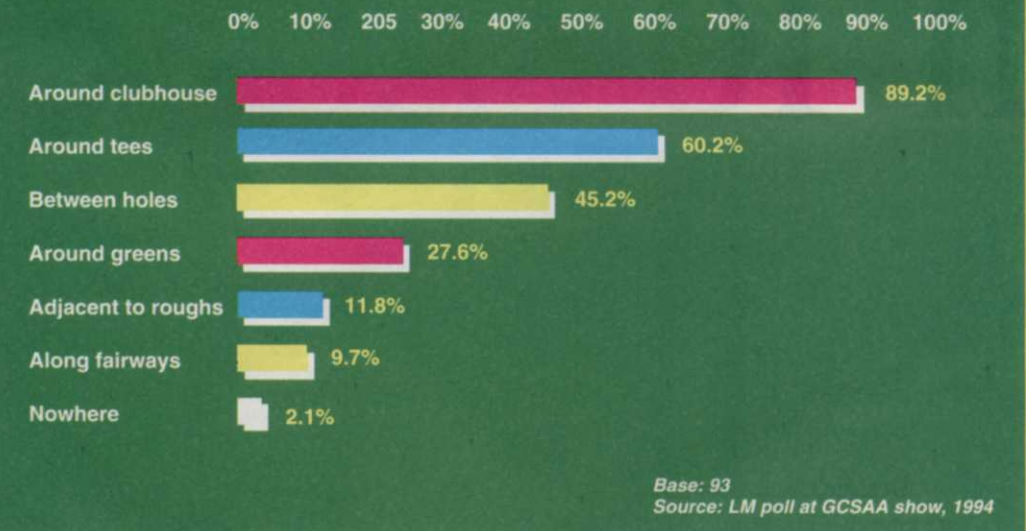
Most—nine out of 10—use annual flowers in the clubhouse area, but annuals are becoming more popular at various other points on the course itself.

For instance, about 60 percent (of the 93 supers we surveyed at the GCSAA's last national conference) feature annuals around tees. Almost half use them between holes, and nearly one-fourth have them around greens.

Roland White of Bald Peak Country Club in Melvin Village, N.H., could have been one of the first superintendents to feature flowers on his course. He started planting them 19 years ago and now has "beds all around the course."

"Overall, there's less maintenance, once you've got the beds in shape," White reports. "We treat them every spring with Eptam

PERCENT OF GOLF COURSES USING ANNUAL COLOR, BY LOCATION



and find we have very few weeds."

White hires two women to tend the flowers and flower beds around the clubhouse—one his wife—during the summer. They work 24 to 36 hours each.

"We put the flowers where they can be seen, in front of our stone walls, around boulders—but we don't have mass plantings," White says. "They go real well here in New Hampshire."

Among the more popular annuals are marigolds, impatiens, snapdragons, periwinkle and salvia. Each species is specific to the types and amounts of soil, fertility, light and water required.

There have been flowers on display at Franklin Hills Country Club, Franklin, Mich. since **Tom Lawrence** has been there—five years. This year, he's switching to more annuals after a season with more perennials.

continued on page 42

The next generation of perennial ryegrass. For a number of reasons.



Advent perennial ryegrass has shown clearly that it's a new class of turfgrass in Rutgers University performance trials. Advent scored top marks for heat and drought tolerance, improved disease resistance and high density. Which makes low-growing Advent the top seed for home lawns, golf course fairways, tees and roughs.

In dormant winter grass overseeding trials in the south, Advent's high turf quality rating was superior to Palmer, Manhattan II, Pennant, Prelude, Premiere, Omega II, Citation II and Dandy plus a host of others. Advent is an excellent choice to overseed an entire golf course.

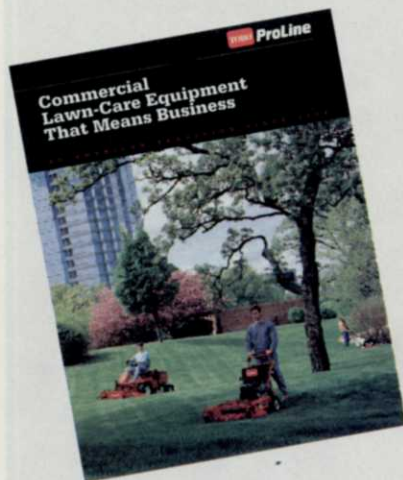
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SURVEY from p. 40

"We have lots of flowers—you name it, we've got it," Lawrence observes, ticking off begonias, impatiens, petunias, geraniums, snapdragons and salvia.

He says the club purchases 200 to 300 flats each year at a cost of between \$6 and \$7 per flat.

"Last year, we had a full-time gardner to pull weeds, fertilize, edge the beds and water," says Lawrence. "This year, we're putting one of our regular crews on them."

Faron Stoops at Chambersburg Country Club in Scotland, Pa. uses chrysanthemums, geraniums, impatiens and tulips—certainly nothing elaborate, but plants that provide plenty of color.

"It's probably a little more expensive to

plant and maintain the flowers," Stoops notes, "but you've got to weigh how they look. We put them where golfers can see them (around the clubhouse, between holes, around tees and around greens), but not where they're in play." Stoops started adding both annuals and perennials about seven years ago, and reports excellent acceptance by the club's members.

"Annuals offer the most prolific flowering of all groundcovers or ornamentals," points out **Jim McMahon** of Coronis Landscaping, Nashua, N.H. "Though they only live for one season, they bloom throughout the growing period, producing continuous color.

"Annuals are the correct choice whenever a big splash of color is desired."

—Jerry Roche

PLANTING AND CULTURE OF SELECTED ANNUALS

PLANT	WHEN TO PLANT	EXPOSURE	SPACING
<i>ageratum</i>	after last frost	semi-shade; full sun	10-12"
<i>babysbreath</i>	early spring; summer	sun	10-12"
<i>balsam</i>	after last frost	sun	12-14"
<i>calendula</i>	early spring; shade late fall	sun	8-10"
<i>candytuft</i>	early spring; late fall	sun	8-12"
<i>China-aster</i>	after last frost	sun	10-12"
<i>cockscomb</i>	early spring; summer	sun; shade	10-12"
<i>coleus</i>	after last frost	sun	10-12"
<i>cosmos</i>	after last frost	sun; partial shade	10-12"
<i>dahlia</i>	early spring	sun	12-14"
<i>forget-me-not</i>	spring; summer	sun; partial shade	10-12"
<i>four-o'clock</i>	after last frost	partial shade, shade (summer)	12-14"
<i>gaillardia</i>	early spring thru summer	sun	10-12"
<i>impatiens</i>	after last frost	sun; shade	10-12"
<i>larkspur</i>	late fall	partial; deep shade	6-8"
<i>lupine</i>	early spring; late fall	sun	6-8"
<i>marigold</i>	after last frost; summer	semi-shade; sun	10-14"
<i>morning glory</i>	after last frost	sun	8-12"
<i>nasturtium</i>	after last frost	sun	8-12"
<i>pansy</i>	after last frost	sun	6-8"
<i>petunia</i>	late fall	sun or shade (summer)	12-14"
<i>phlox</i>	early spring	sun	12-14"
<i>poppy</i>	early spring thru summer	sun	6-10"
<i>portulaca</i>	after last frost; late fall	sun, shade (summer)	10-12"
<i>rudbeckia</i>	spring; summer	sun	10-14"
<i>scarlet sage</i>	spring; summer	sun; part shade; shade (summer)	8-12"
<i>snapdragon</i>	spring; late fall	sun	6-10"
<i>spider plant</i>	early spring; spring; fall	sun	12-14"
<i>sunflower</i>	after last frost	sun	12-14"
<i>sweet alyssum</i>	early spring	sun	10-12"
<i>verbena</i>	after last frost	sun	18-24"
<i>vinca</i>	after last frost	sun	10-24"
<i>zinnia</i>	after last frost	sun	8-12"

Source: "Through the Green" (Georgia Golf Course Supts. Assn.)



IN NEW JERSEY'S "BROWN PATCH ALLEY... I'VE HAD GREAT SUCCESS WITH DACONIL 2787®."



*Tim McAvoy,
Superintendent,
Fox Hollow Golf Club
Somerville,
New Jersey*

"This part of New Jersey might be called 'Brown Patch Alley,'" exclaims Tim McAvoy, certified golf course superintendent at Fox Hollow Golf Club in Somerville, NJ. "The terrain, the soil, and the grasses we grow seem to make us more susceptible." Fortunately, Tim has found that Daconil 2787® Flowable Fungicide from ISK Biosciences Corporation "has a great ability to stop Brown patch every time."

Stops Dollar spot, too!

Fox Hollow's greens are bentgrass, Tim says, "and unfortunately, *Poa annua*." Recently renovated tees are 100% bentgrass, while the fairway grass is a combination of fescue, rye and *Poa*. That makes the fairways more susceptible, he believes, to Brown patch and Dollar spot.

"The fairways are where I use Daconil 2787 most," he says. "Starting in late June, I pretty much follow a 10- to 14-day preventive schedule for both diseases."

"We try to make good use of all the products and cultural practices available to us," Tim adds. "We use a slow-release urea-type fertilizer in the spring and then little or no nitrogen until

September. We watch the water so we're not exceptionally wet, and we dethatch and do some other things to keep the microclimate as cool as possible when the turf is under the most stress."

Tank mixing saves time.

Besides great Brown patch and Dollar spot control, superintendents get still another important benefit from Daconil 2787: "The flowable formulation is compatible with so many other products," says Tim, "I can tank-mix and knock out two or three diseases. With so much acreage, tank mixing really helps me stay within my personnel budget."

And with Daconil 2787 as the cornerstone of Tim's disease-control program, he doesn't have to worry about disease resistance, either: "As far as Daconil 2787 is concerned, I don't think there's ever been a documented case of resistance. I've always had great success with Daconil 2787."

Have you got a Daconil 2787 success story? Tell us about it. If we use your story in an ad, we'll donate \$100 to your favorite charity. Write Jackie Tengler, ISK Biosciences Success Stories, 5885 Landerbrook Dr., Suite 215, Cleveland, OH 44124. Always follow label directions carefully when using turf and ornamentals plant protection products.

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**The cornerstone of your
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LAWN CARE INDUSTRY

Emergency relief!

Mid-season rescues of dying lawns are grounds for good customer relations, to say nothing of new customers!

■ It's rounding June, heading for July.

You think you've got control of the summer schedule, when you get a frantic call from some guy who says his lawn is a mess. The reason his name doesn't ring a bell is that you've never worked on his lawn. He was always one of those "it's-too-expensive-and-I-enjoy-doing-it-myself" guys.

But what a summer. Too much rain. Disease. Insects. It was all too much for the average do-it-yourselfer. If only he had hired you in the fall to rejuvenate his tired old turf and put him on a preventive program, it wouldn't look so bad now.

But you agree to help, in the interest of human relations.

Like new—"That's the nature of our business," says Jim Anderson, All-Seasons Service, Itasca, Ill., when asked about mid-season lawn rescues. But the results aren't always the same. The amount of life a crew can breathe back into a damaged lawn, says Anderson, "depends on the time of year they get the call."

"Every year is a little bit different," says Kathy Juntgen of Emerald Green, Fort Wayne, Ind.

"[Homeowners] call when the dandelions get out of hand, and they panic; or else they had another company that mistreated the lawn, or they themselves made a mistake," says Juntgen, who's in business with her husband, Steve. "There have also been times when chinch bugs were a serious problem."

The usual plan of action for a lawn rescue involves slit seeding, fertilizing, and plenty of water, which is the biggest mistake homeowners make. When high utility bills threaten, people just don't water

enough in hot, dry weather. For weed or insect problems, standard practice is to use the appropriate control product.

"Within 60 to 90 days, we can have it back in shape," says Anderson. "Some lawns are totally gone, but that doesn't mean we can't do anything to revive them."

"Lawn care has come a long way, so you don't see lawns in that bad of condition in this day and age," explains Juntgen. "People will call for advice, we tell them

COMPLAINTS AS OPPORTUNITIES

■ If a customer—a landscape client, a member of the golf course, a citizen using one of your athletic fields—has a complaint, you have a tremendous opportunity to build customer loyalty.

A survey by the U.S. Office of Consumer Affairs shows that when complaints are successfully resolved, 73 percent of the complainers would buy that product or service again.

Conversely, when customers had minor problems but did not complain, nearly 67 percent would not buy the same product or service again. The three reasons mentioned most often for not complaining were:

- It wasn't worth their time and effort.
- They believed complaining wouldn't do any good.
- They didn't know how to or where to address complaints.

To handle complaints successfully:

- 2) Sympathize.
- 3) Avoid justifying or making excuses.
- 4) Ask questions.
- 5) Agree on a course of action.
- 6) Inform and involve others who need to know.
- 7) Monitor the progress in resolving the complaint.

what to do and they they go out and do what they wanted to all along."

Winning them over—Anderson has had great success in keeping these mid-season converts as long term customers. He says every one whose lawn he saves remains a customer "for years afterwards."

Emerald Green also has a good conversion rate. "We're a smaller company," says Kathy, "that goes more on service than volume." So it can easily find room on its roster for new acquisitions.

—Terry McIver

Composting offered to contractors

Acts as 'holding company' for land used to process landscape debris.

■ GreenCycle, Inc. of Northfield, Ill., has mastered the science and business of composting, just in time for the projected increase in the need for alternatives to landfill sites.

Along with the belief that landfill sites are becoming depleted is the realization that yard waste, by its very nature, is reusable.

GreenCycle began its service in July of 1992 and has grown to where it now operates composting sites in Missouri, Massachusetts, Georgia, Connecticut, Illinois and Indiana. Proposals are pending for several other sites throughout the U.S. The company services primarily municipalities, private landscape contractors and waste disposal companies.

The company expects to process about 600,000 cubic yards of material into approximately 150,000 cubic yards of high-quality compost in 1994.

Sites are as small as five acres, and tipping fees are competitive. And it's important they blend in with the community, lest the citizens complain about odors, as has happened to other composting companies.

The actual time it takes to process debris into usable compost is about 120 days. The resulting mulch or soil amendment is sold to farms, greenhouses, nurs-



David Wagner, Peter Repenning and Caroline Repenning (left to right) form joint ventures with local operators.

eries, landscape contractors, sod farms, golf courses, parks, home gardeners and other associated industries.

A family affair—GreenCycle is run by Caroline Repenning, president; David Wagner, vice president of marketing; and Peter Repenning, vice president of operations.

"A well-managed composting site quickly reduces yard waste to useful, environmentally-safe humus," says Caroline Repenning. "When sites are planned properly and managed correctly, it costs less to turn yard waste into valuable compost than it costs to employ other disposal methods. And using the correct technology eliminates the overpowering odor which often results from stockpiled yard waste, a com-

mon phenomenon of poorly-run facilities."

To eliminate odors, waste is formulated, mixed and shredded before it has a chance to rot and begin emitting odors. The byproduct is clean: no viable weed seeds or pathogens remain, and virtually all the pesticides in the initial material are broken down into benign, inorganic carbon compounds.

Even though pesticide residues are unlikely, the company goes ahead and tests for them anyway. Any which might remain are broken down into benign, inorganic compounds by the heat and microbial digestion of the composting process.

Joint ventures—GreenCycle has formed joint ventures with local operators who chalked up years of experience on their own prior to this association.

One is a former owner of a solid waste disposal company; another has eight years of experience in the composting business.

But don't confuse this arrangement with a franchise approach. Repenning says these are not franchise agreements. The local operators help GreenCycle in its search for land, which the company then leases.

GreenCycle arranges sufficient project funding for site development and operation, and provides each site with necessary general management and financial skills, a uniform operating plan and a national corporate identity.



GreenCycle will produce 150,000 cubic yards of compost in 1994.

Choose Bayleton this year for the same

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Year after year, BAYLETON® fungicide has controlled the tough diseases. Like summer patch and dollar spot. Not to mention a broad spectrum of other turf diseases.

Plus, BAYLETON has provided excellent control of powdery mildew and rust on ornamentals.

That's why it's been a leading fungicide on the finest courses in the country for more than ten years.

As if that weren't enough, consider the fact that BAYLETON is systemic. Which translates into longer control.



Our new water soluble packets give you consistency in formulation and control.

Which is all good reason to treat your entire course with BAYLETON. Especially your fairways, since it keeps your customers from tracking disease up to your tees and greens.

For more information, contact Miles Inc., Specialty Products, Box 4913, Kansas City, MO 64120. (800) 842-8020.

It may be the most consistently rewarding choice you make.



Circle No. 118 on Reader Inquiry Card

HOT TOPICS

Clinton, EPA detail pesticide control plan

WASHINGTON— The Clinton administration wants to establish stricter testing standards for agricultural pesticides.

Environmental Protection Agency director Carol Browner also says the agency would examine sources of pesticide exposure, from playgrounds to drinking water.

A proposed bill would:

- Require comprehensive studies of the pesticide levels in food eaten by infants and children.
- Set a single health-based, scientific standard for all pesticides used on all foods, covering all health risks.
- Decree a seven-year deadline for banning pesticides that cannot be proven safe.
- Reduce pesticide use by helping farmers institute alternative methods of pest control.

The bill is a response to a recent USDA study which found pesticide residues on more than 60 percent of fruits and vegetables sampled. Most of those residues, however, were below federally established tolerance levels.

The bill, as proposed by the Clinton administration, would define a pesticide residue as unacceptable if it causes one excess case of cancer per million cases.

If passed, the legislation would change how the government determines the cancer risk from exposure to control products and require that infants and children receive special protection because, according to the bill, they eat more fruits and vegetables in proportion to their body weight.

Additionally, the legislation would scrutinize control product use around public grounds and monitor pesticide

residues in drinking water more fiercely.

The legislation would widen the parameters by which it judges product safety, requiring new levels of testing for possible effects on the brain, reproductive system and immune system. A "negligible risk" standard would mean the product could only be used in amounts where there is a "reasonable certainty of no harm."

The bill was carefully worded to enlist the support of the public—with the stated concern for "infants and children," and by saying the bill is meant to "ease the burden" on farmers by providing them with non-chemical means of pest control.

But the bill would also increase the amount of paperwork farmers do to document their chemical use.

Ripple effect—The turf and ornamental chemicals market would certainly be affected by the legislation, as many agricultural control products are used in the specialty chemical industry.

Allen James, executive director of Responsible Industry for a Sound Environment (RISE), says the level of scrutiny the administration wants to impose on product testing is not new, but certainly would be more extensive,

"These products undergo 120 tests,

including testing in those areas," says James, "however, the procedures and science are not in place (for the higher level of testing). The current tests cover most of those areas adequately."

"If the new law goes into effect and imposes a larger range of testing," says James, "the EPA will be further burdened. There's no way it could accomplish the testing" (within the seven-year deadline).

According to James, the agency is having enough trouble as it is, trying to reregister products under existing standards.

The Clinton proposal will compete with two other pending bills. One, a less-restrictive bill, has the support of the food industry and American Farm Bureau Federation, and has a majority of support in the House and 20 sponsors in the Senate.



James: Proposed bill would burden EPA and industry.

2,4-D/cancer link 'weak' says EPA panel

WASHINGTON—An EPA-sanctioned panel says that existing studies of the herbicide 2,4-D have not demonstrated a cause-and-effect link with cancer, according to a report by the Industry Task Force on 2,4-D Research Data.

The group convened in April of 1993 to evaluate the carcinogenicity of 2,4-D after studies suggested a cancer link. It issued its latest report in late March of this year.

The EPA must now consider these latest finding in evaluating the need for further regulatory action on 2,4-D.

More than 4000 studies have been made of 2,4-D since 1948.

ELSEWHERE

Turf researcher Jack Murray dies, page 50

EPA to monitor small engines, page 50

Worker law targets golf courses in Sept., page 50

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THE ACT OF CHOOSING...

Technology now brings you choices in your fertility program that were not available a few years ago. Previously, industry standards such as methylene urea nitrogen were only available in granular form. Now there is an exceptional source of controlled release nitrogen in a

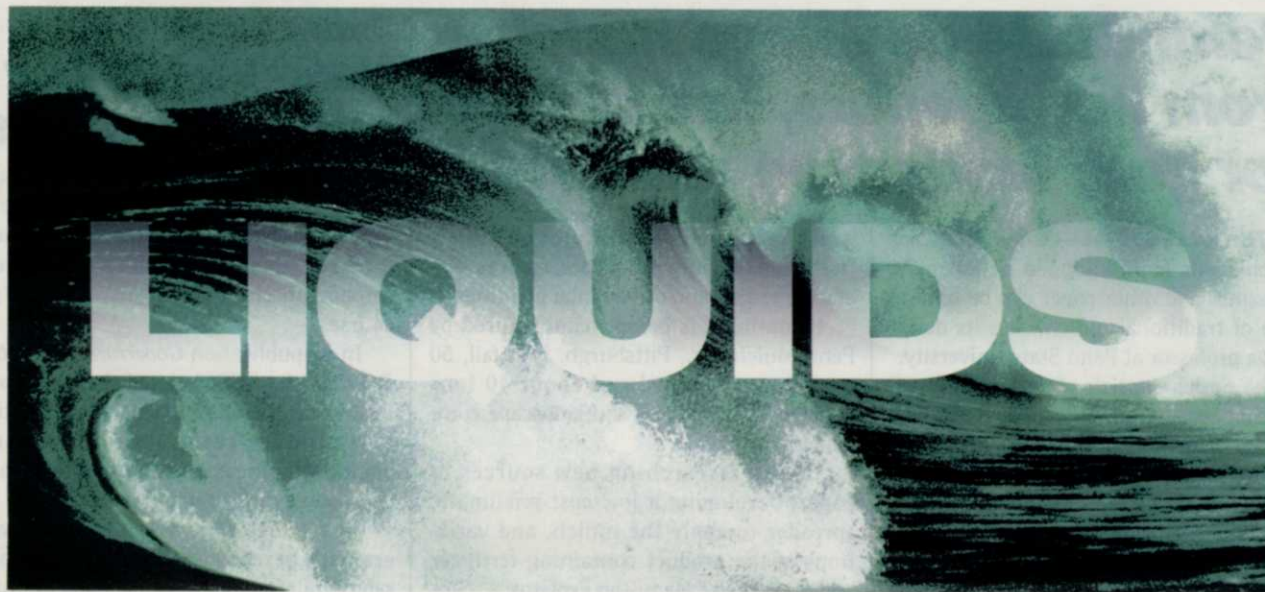
liquid concentrate. Growth Products is pleased to release Nitro-30 SRN (30-0-0) an unprecedented nitrogen source for consistent release with no surge growth. This liquid source of methylene urea contains a variety of shorter chain nitrogen polymers which provide optimal initial and residual turf response.

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Fertility has become a science. Soil and tissue analysis along with University research gives you the proficiency to know specifically what turf requires for optimum maintenance. Therefore our family of liquid concentrate products has been formulated with the highest quality

raw materials enabling you to correct deficiencies immediately and maintain healthy growth, uniform color and good density. We have developed a comprehensive family of N-P-K blends containing controlled release nitrogen and chelated minor elements to satisfy all your maintenance demands.



THAT WHICH IS SUPERLATIVE..

The strength of liquids provide you with dual efficiency through both foliar and root uptake while delivering the ultimate nutrient spray coverage. Growth Products family of liquids were specifically formulated to be compatible with other technical materials, thereby saving time and labor. There is no need to worry about mower pick up, product tracking or

particle breakdown, since liquids eliminate these concerns. Growth Products, Ltd. Professional Liquid Fertilizers, Micronutrients and Natural Organics have everything you require to establish a superior fertility program. To find out why Growth Products liquids will improve your expertise, raise your awareness by calling us on our toll free number: **1-800-648-7626**



Circle No. 105 on Reader Inquiry Card

Agronomist, researcher James 'Jack' Murray dead of cancer

BRADENTON, Fla.—James "Jack" Murray, former USDA research agronomist, died on May 15 at his home here after a long battle with cancer. He was 54.

Murray was an internationally-known expert in turfgrass breeding and management.

Throughout his professional career, Murray authored or contributed to 104 scientific publications, 47 technical reports and 26 work progress reports.

He served on many committees and organizations within the turfgrass community, including the Turfgrass Division of the Crop Science Society of America, the Musser International Turfgrass Foundation and the International Turfgrass Society.

Murray's research efforts led to the development of Belturf Kentucky bluegrass and Belair zoysiagrass. Belturf has

been used as a parent in producing improved Kentucky bluegrass cultivars like Adelphi, Majestic, Eclipse and America.

Murray also developed tall fescue with improved stress tolerance and improved tolerance of aluminum and acid soil conditions.

In the mid-'80s, Murray developed a zoysiagrass and tall fescue mix that provides a year-round green turf with less maintenance.

Murray investigated standard maintenance practices such as mowing and water and discovered methods to minimize



Jack Murray

maintenance costs while maintaining quality turfgrass.

Murray was a founder of the National Turfgrass Evaluation Program (NTEP) and its first director from 1980-1988. The NTEP tests turfgrasses nationwide and provides the most comprehensive information on grass selection in the U.S.

Murray was also a charter member of the National Sports Turf Council.

A frequent speaker at local, state, national and international meetings, Murray provided consultation on the management of turfgrass at many sites, including the White House and Arlington National Cemetery in Washington, D.C. and the Laurel and Pimlico Race Tracks in Maryland.

Murray is survived by his wife Bobbie and son Paul. The family asks that donations be sent to the Hospice of Southwest Florida, 6055 Rand Blvd., Sarasota, FL 34238; or to the Woodland Baptist Church, 9607 State Rd. 70 East, Bradenton, FL 34202.

Penn State develops mulch from newspapers, magazines for golf, landscape markets

STATE COLLEGE, Pa.—A new landscape mulch made from chopped newspapers, magazines and other paper can be used in place of traditional mulch, says its developer, a professor at Penn State University.

The mulch consists of small green pellets that resemble rabbit food. It's spread over areas such as golf courses and lawns where grass seed is applied. The pellets expand when wet, so only a thin layer is needed to cover a large site.

The new product, for which a patent is pending, is called Pennmulch. Agronomy instructor George Hamilton developed it.

"Traditional mulches present problems," says Hamilton. "Hydromulching requires an expensive machine and a high-volume water source. Straw often contains weed seeds, tends to blow away, and is difficult to store and handle. In addition, soil micro-organisms that break down straw also deplete soil nitrogen."

Pennmulch pellets can be spread by hand or by using conventional spreaders. It can also be used in combination with a starter fertilizer.

"Although it was designed for use in

grass seedbeds," Hamilton continues, "we're looking into other uses, such as vegetable gardens and ornamental plantings."

Pennmulch is being manufactured by Penn Mulch Inc., Pittsburgh. Last fall, 50 tons were produced and about 40 tons were sold to turfgrass and landscape companies.

"We're researching new sources of paper, developing a low-cost pneumatic spreader to apply the mulch, and variations of the product containing fertilizer and grass seed," Hamilton explains.

"Material-wise, it's more expensive than hydroseeding or straw," he admits. "But as we increase production facilities in the next six months, the cost should come down. Plus, depending on the site you want to use it at, there could be considerable labor savings in applying it."

Pennmulch is being distributed mainly throughout the northeastern section of the U.S., but can be freighted anywhere in the country.

To find out more about the product, call Penn Mulch Inc. at (800) 792-5537.

Deadline Sept. 23:

New worker law hits golf courses

LAWRENCE, Kans.—The Golf Course Superintendents Association of America says the new Worker Protection Standard for Agricultural Pesticides will have an impact on the operations of many golf courses.

In its publication *Government Relations Briefing*, the GCSAA noted that the Worker Protection Standard covers all golf courses that produce turfgrass or ornamental plants, whether for use exclusively on the golf course or for general public sale.

"It requires employers to provide workers with personal protection equipment, safety training and warning signs to protect laborers from hazards stemming from exposure to pesticides," the *Briefing* article said.

The new federal standards will take effect Jan. 1, 1995, but pesticide safety training materials must be developed and distributed by Sept. 23 of this year.

The bill stipulates that a worker may enter an area treated with a pesticide during the restricted entry interval on the label if four conditions are met, one of which is disallowing any hand labor. For more information, contact GCSAA's government relations program at (913) 832-4470.

INFO CENTER

Selected books and videos for the industry

PLANT LOCATOR...The Florida Nurserymen & Growers Association's annual Plant Locator was scheduled to be published at the end of May. The revised and expanded text will cover all aspects of the horticulture industry. The Locator now includes floriculture, trees, palms and cycads, ground covers, vines, aquatic and woody ornamentals as well as foliage and allied supplies and serices. Contact the FNCA at (407) 345-8137.

VIDEOS HELP TRAIN STAFF...The Professional Plant Growers Association has three short videos to help landscapers and retailers train their staffs and success-

fully install and maintain bedding plants.

- *Blooming Profits* covers the care and merchandising of bedding plants;
- *Flowering Plants* covers the care and merchandising of flowering potted plants;
- *Success with Bedding Plants* covers how to select, install and maintain bedding plants. To order, contact the association at (800) 647-7742.

SEED CULTURE GUIDE...The newly-revised and updated edition of the *Ball Culture Guide: The Encyclopedia of Seed Germination, 2nd Ed.*, provides in-depth germination and scheduling information for professional floriculture growers on

more than 160 of the most popular seed-grown crops. The guide includes information on bedding plants, flowering and foliage potted plants, herbs, cut flowers, and perennials plus an all new chapter on ornamental grasses. The guide costs \$39. Contact Ball Publishing at (708) 208-9089.

PLANT LOCATOR...The National Institute on Park and Grounds management has just published a new management guide entitled, "A Basic Handbook on Athletic Field Maintenance." The guide contains 40 pages and 20 illustrations. Contact the Institute at P.O. Box 1936, Appleton, WI 54913-1936.

GREEN INDUSTRY EVENTS

What's going on in the industry

JUNE

8: Lofts Seed, Annual Field Day, at the Lofts Ohio site in Wilmington, Ohio. Contact: David Goodwin, (513) 382-1127; (800) 328-1127.

10: Lofts Seed, Annual Field Day, Lofts Maryland, Beltsville, Md. Contact: John Patton, (301) 937-3332; (800) 732-3332.

13-14: Harvard University, Graduate School of Design, courses and workshops related to the planning and design of golf courses and resorts. Includes golf course design, golf/residential site planning; golf course development and golf clubhouse design and site planning. For a catalog, contact the Office of Development and External Relations, GSD, Harvard University, 48 Quincy St., Cambridge, MA 02138; (617) 495-1680.

22: Sports Turf Association Annual Field Day, Guelph Turf Institute, 328 Victoria Rd. South, Guelph, Ontario, Canada. For more information, contact Jane Rivers at 82 Rodney Blvd., Guelph, ON Canada, N1G 2H3; (905) 847-9181

Put a Front-Mount Millcreek Aerator on Your Commercial Mower.

Get more production and profitability from your John Deere, Ford, Kubota or Excel Hustler up-front mowers by attaching a front mount Millcreek core plug aerator.

Millcreek aerators have individually-mounted spoon wheels so you can make gentle turns without tearing turf. And our sturdy protective cage increases safety.

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Circle No. 122 on Reader Inquiry Card

JOB TALK

Potassium gets credit for leaf spot reduction

■ Prolonged spells of hot, wet weather these past few summers have been especially troublesome on golf courses. Ironically, as Bill Johnson prepared for one, he was protecting against the other—and leaf spot—last year at the World Houston Course, Houston, Texas.

Johnson is the regional superintendent for American Golf Corp., the world's largest golf course management corporation. He also serves as an internal consultant at seven American Golf courses in south Texas, including World Houston. In 1991 he began an experiment with sulfate of potash, a high potassium fertilizer, to increase the turf's drought tolerance.

But instead of the anticipated summer droughts, Houston's golf courses were inundated with unusually wet weather. Over the last 20 years, the city has had average annual rainfall of 44 inches. For the last three years, however, the total annual rainfall has exceeded 55 inches.

All the rain was particularly hard on golf courses in the southern half of the mammoth state. The busiest courses—like World Houston, host to 55,000 rounds per year—were especially stressed.

"The courses here have clay soil, which doesn't drain well, and our course tends to be even more poorly drained," says Johnson.

It wouldn't wait—Johnson had already begun a fertility program, using five pounds of K_2O on the front nine, and two pounds on the back.

"I favored sulfate of potash due to its low salt index," says Johnson. "I've always maintained high potassium application rates for my greens and tees, to offset potential leaching loss, increase rooting and improve stress tolerance."

For the experiment, he used Great Salt Lake Minerals Corp.'s new Turf Blend, which, according to the company, contains the lowest salt index of any commonly-used potassium source now on the market.

"The importance of this product lies in the fact that it provides an essential dual nutrient fertilizer while minimizing the risk of turf burn," says Dan Nason, marketing manager for Great Salt Lake Minerals.

"Sulfate of potash is an excellent dual nutrient source safer for turfgrass because of its low salt index, which also allows for safer, higher rates of potassium that promote greater root development and a generally healthier stand of turf. The true value of sulfate of potash becomes especially evident when higher rates of potassium are desired prior to periods of severe stress from disease, drought, heat, cold and wear."



The number five fairway and bunkers at the World Houston Course, which uses potassium to keep turf disease-free.

Although the expected drought of 1991 never occurred, Johnson continued his applications. After the spring rains of 1992, Johnson was confronted not with drought, but with leaf spot disease.

"The severity of the disease and the majority of the damage was confined to the back nine, even though I have several drainage problems on the front nine," Johnson says. "One would expect, all things being equal, that leaf spot severity would be more intense on turf subjected to prolonged periods of free standing water and reduced water infiltration."

To his surprise, there was less disease infestation on the high potassium front nine, but the damaged areas on the front nine recovered faster and more completely than those on the lower potassium back nine.

"The big thing is that we repeated the test in 1993 and got the same result. That, to me, says a lot," says Johnson. "There is no question in my mind that it's reducing leaf spot."

The difference in disease incidence between the front and back nines was so obvious, that, as Johnson says, "Even Ray Charles could see it."

As a result of the experiment, he says, "I feel that high potassium may also play an important role in turf disease resistance and general stress injury recovery."

As an additional benefit of experiment, Johnson was impressed with the quality of Great Salt Lake's Turf Blend. "The particles are very uniform, it's very clean, and when you spread it, there's not a little cloud following you around."

The improved uniformity minimizes screen costs and translates to higher quality blends with less segregation. To Johnson, who must work within a tight budget, that leads to an important consideration when determining whether to go with the added potassium. It's more cost effective, according to Johnson.

But he'd still like to see what a high potassium application does to the turf during a dry spell.

PRODUCT SHOWCASE

Insecticide provides April to October control

Merit insecticide from Miles, Inc. provides season-long control at a rate of 0.3 lbs. active ingredient per acre.

Available in limited quantities on June 1, the company will make it available in full quantities next spring.

The common name of Merit is imidacloprid. It offers a novel mode of action, says Miles, which makes it effective against insect pests that may be resistant to current insecticides.

Merit does not inhibit cholinesterase in humans.

Merit also provides unusually long residual control: one spring application to control billbugs, black turfgrass ateniens or annual bluegrass weevil will also control white grubs later in the season, eliminating the need for further applications.

Merit can be used on home lawns, commercial sites, golf courses, parks, playgrounds, athletic fields, and other sites.

It can also be used on ornamental plants in commercial, residential and interior landscapes.

It can be applied as a foliar spray, soil drench, soil injection or broadcast application.

"It's very, very strong on ornamental insects like aphids, adelgids, whiteflies, lace bugs, leafhoppers and mealybugs," says Jim Dotson, Miles research production manager for turf and ornamental products, "but it has poor activity against mites, phytophagous nematodes and most beneficial insects."

Two-way control—Merit controls insects by ingestion and contact. Its mode

of action involves post-synaptic blockage of the nicotinic acetylcholine receptor sites of the insect nerve. The insect's nervous system is disrupted, resulting in death.

Dotson says Merit averaged 94% control in 88 trials, about 10% higher than existing compounds.

According to the company, no evidence of phytotoxicity was found in five years of university and company tests.

Because of its low toxicity to mammals, birds and fish, Merit poses low risk to applicators and the environment, says Dotson.

Well-researched—"This has been the most highly-researched new insecticide to ever come into the turf market," says Dotson. "University people, who have worked with it for up to four years, are very excited about it." Researchers involved with testing Merit include Dr. David Shetlar of Ohio State University and Dr. Patricia Vittum of the University of Massachusetts.

In Vittum's tests on white grubs, Merit applied in April was found to be active through October.

Shetlar's tests against white grubs, Northern masked chafers and billbugs showed Merit "provided excellent control with reduced concern about toxicity."

Wide window—The suggested applica-



Circle No. 191 on Reader Inquiry Card

tion window for turf applications runs from early April through mid-August. Merit applied in the spring will control billbugs and annual bluegrass weevils, while also providing excellent residual grub control through the fall.

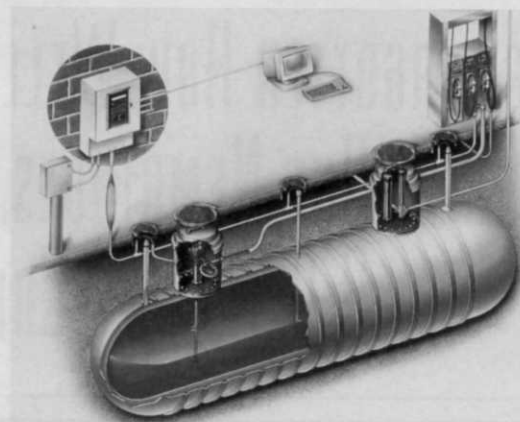
"This combination of a wider application window and fewer applications means greater efficiency for the applicator, and the low use rate means reduced chemical load on the environment," says Steve Chaney, turf and ornamental marketing product manager for Miles.

For maximum efficacy, Merit should be watered in within 24 hours of application. It will be effective, however, if watered in within 8 days.

Leak prevention for these underground storage tanks

The Omega Environmental Total Compliance Program for USTs includes the proprietary TC-110 Lead Prevention System for monitoring tanks, piping and sumps.

The TC-110 maintains and monitors pressurized air in the annual space of double-wall tanks and pipes. In the event of a breach, the "pressure curtain" pneumatically seals the tank, preventing any product from being released into the

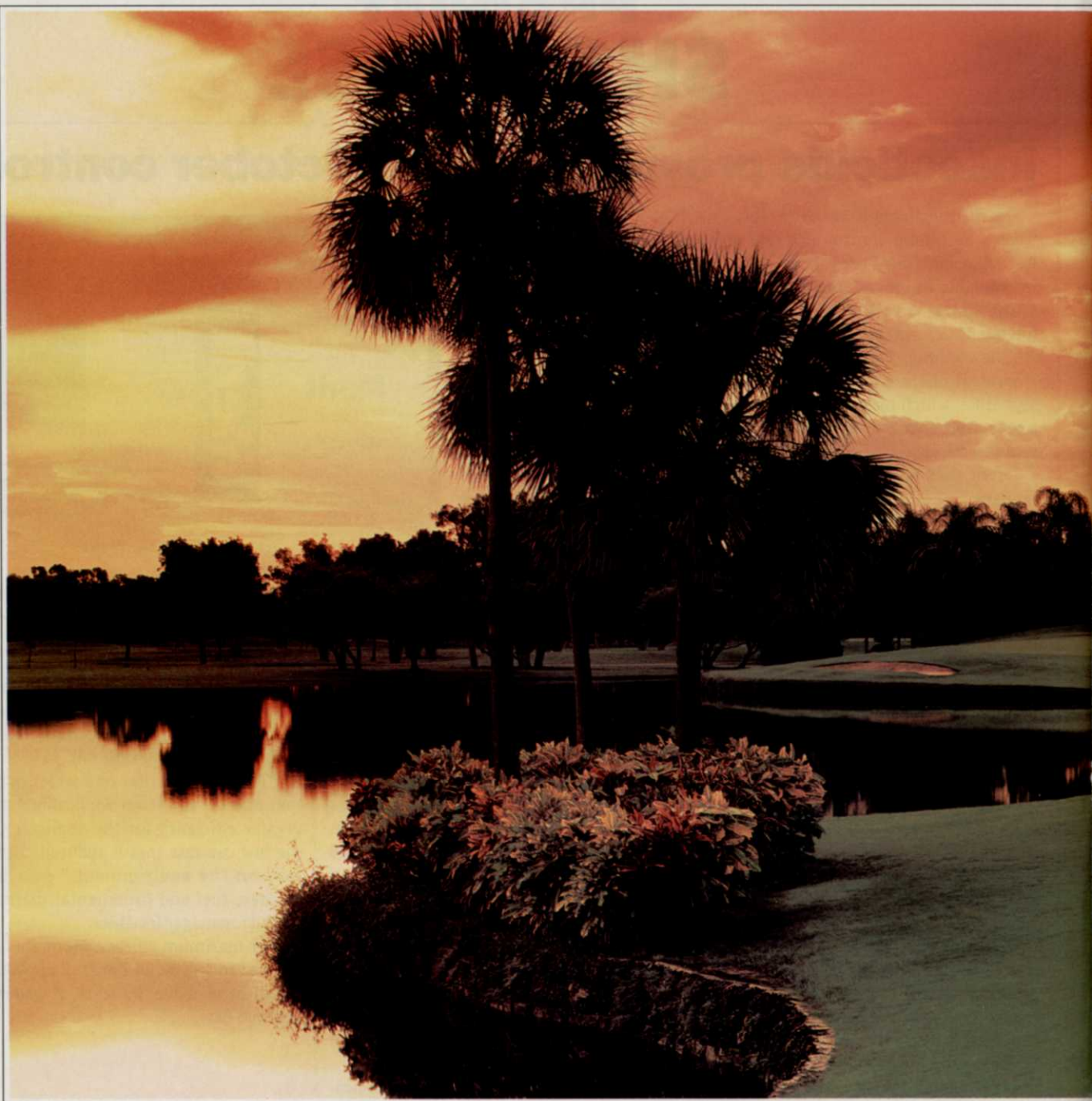


environment.

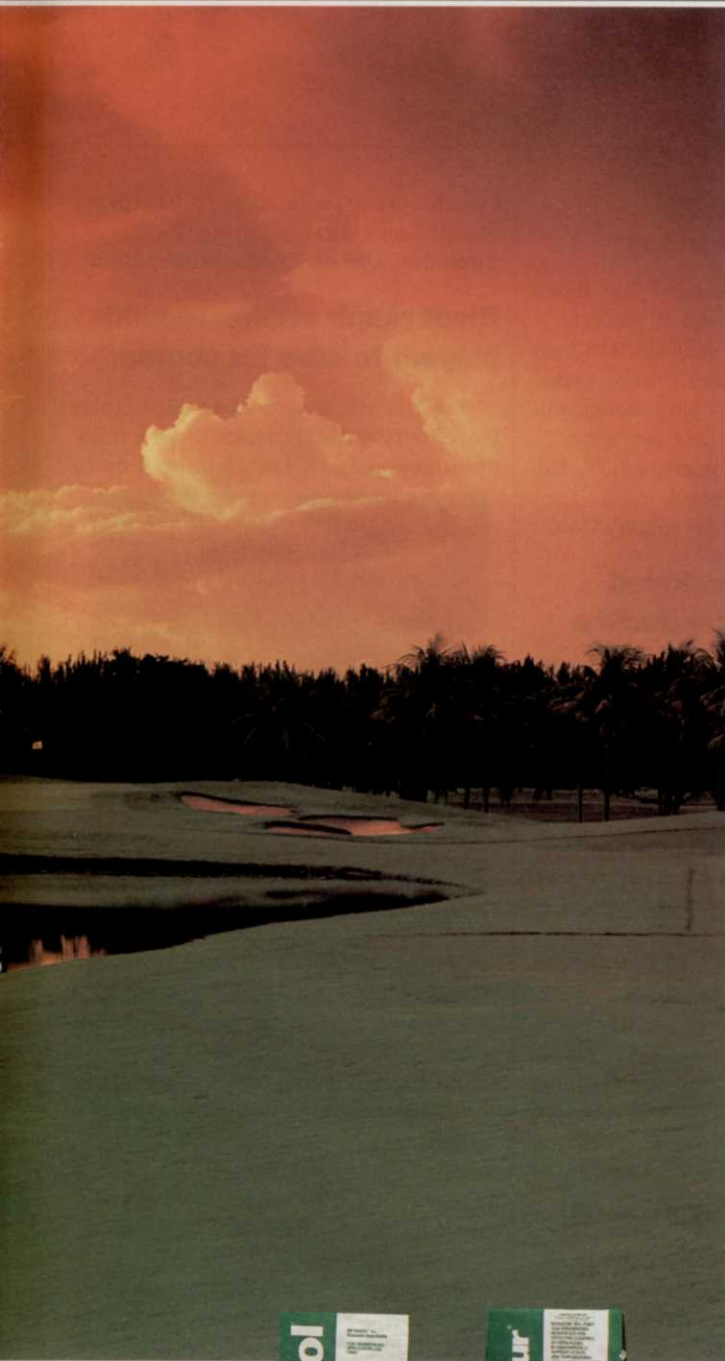
The system also automatically notifies the owner.

Because of the TC-110's capabilities, American International Group (AIG) has creative exclusive, low-cost pollution liability insurance with coverage of \$1 million per site.

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IF YOU'VE FORGOTTEN HOW WELL WE CONTROL MOLE
CRICKETS AND NEMATODES, CONSIDER THIS
A REFRESHER COURSE.



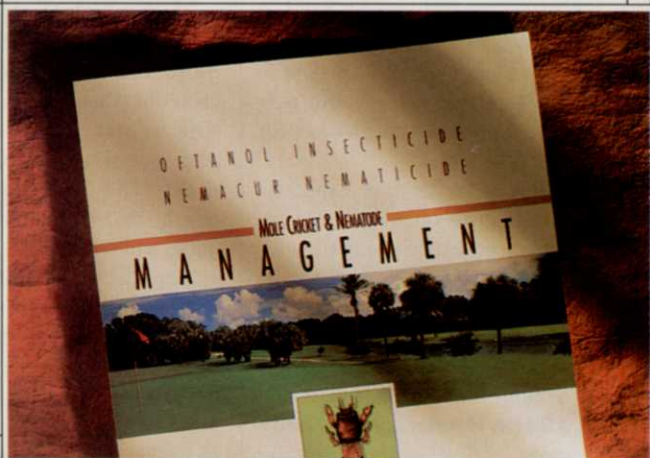
We wrote the book on mole cricket and nematode protection. Now we'd like to send it to you.

In it, we'll show you why there's nothing better for controlling mole crickets than OFTANOL® insecticide. It gives you excellent residual control. It costs about 30% less per 1,000 square feet than the closest competitor. And it stops mole crickets. Plus, it controls fire ants, too.

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Examine the information. Then apply it. And you'll have a course everyone will study.



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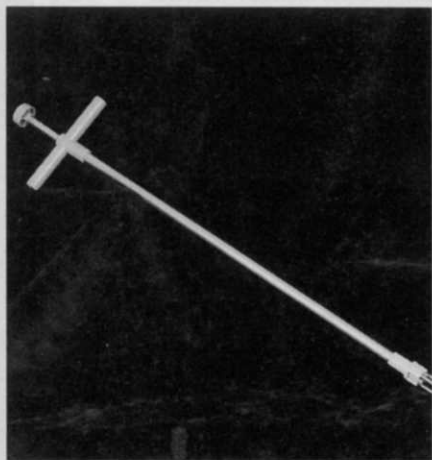
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PRODUCT REVIEW

Hand-held tool removes entire weed, roots and all

"Speedy Weedy" makes weeding quick and easy.

Manufactured in Sweden, the weeder is



made of plastic, aluminum and steel. When the tool rotates in the ground, the feeder roots of the weed wrap around its three prongs. A release button ejects the weed off of the tool.

"Speedy Weedy" is 40 inches long, so it eliminates bending down or kneeling.

Circle No. 193 on Reader Inquiry Card

Sickle bar mower offers ultra-fast off-lawn mowing

Troy-Bilt Manufacturing Co. has redesigned its Sickle Bar mower for easier maneuvering around obstacle and other advantages.

In addition to an eight-inch ground clearance for mowing the roughest terrain, the new Troy-Bilt Sickle Bar Mower is available with a choice of 3.5-, 4- and 5-hp Briggs & Stratton engines and new anti-vibration mounted handlebars for greater operator comfort.

It also features larger fuel capacity, wider selection of cutter bar widths (from 34 to 42 inches) and new controls with easy use micro-switches that shut off the machine if the operator lets go while the wheels and/or blade is engaged.

The new unit also features easy power steering as a major product advancement.

Circle No. 194 on Reader Inquiry Card

Yipes! New painting device for field stripes

The Qwik Traffic Striper lays down crisp stripes on turf, asphalt or concrete.

The unit rests on a stable, 13x16-inch base formed by four rubber wheels. A wind guard feature allows striping to be completed on windy days without overspray.

Paint is available in white, yellow, red, black, green and gray aerosol.

Circle No. 195 on Reader Inquiry Card

New combination found to control summer decline

Bermudagrass summer decline complex can be controlled by combining 4 oz. of Chipco Aliette brand WDG fosetyl-Al with 8 oz. of Fore brand WP mancozeb. Fore flowable is not compatible with Aliette WDG, however.

The disease is a reaction to *Pythium* and *Rhizoctonia* species, which prey on turf exposed to a variety of stress factors.

The effective concoction was tried by Dr. Leon Lucas, extension turf pathologist at North Carolina State University.

"This is the first fungicide treatment I've seen that can actually provide higher quality turf by controlling the root and

crowns associated with bentgrass decline," says Lucas.

Circle No. 196 on Reader Inquiry Card

Divot repair station reminds players to care for course

Divot Mates, free-standing divot repair tools from Par Aide Products Co., are made of durable polyethylene, and hold up to



four gallons of seed mix in a hinged container.

Circle No. 197 on Reader Inquiry Card

14 attachments available for infield surface groomer

To help construct and maintain the best possible infield surface, the Toro Company has offered the Infield Pro 5000 and Infield Pro 2000.

Both vehicles are derived from the reliable, operator-friendly design of Toro's Sand Pro line, and each offers users a full line of attachments and accessories to meet the varying needs of municipal parks and schools.

The 5000 has a fuel-efficient, cool-running 16-hp twin cylinder Vanguard engine with a fully pressurized oil lubrication system for

longer life.

The Infield Pro 2000 features a 12-hp Kohler engine with ample power to maintain a fast work rate, whether conditioning, raking or grading.

For the best field surface, attachments include the Finish Grader, Drag Mat Infield Conditioner and Spring Rake. Ten more attachments are available.

Circle No. 198 on Reader Inquiry Card



PRODUCT REVIEW

Hydrostatic, zero-turn mower hits market

Gravely International's Promaster 100 ZTR mowers are engineered to take full advantage of the latest in hydrostatic transmission benefits.

According to the company, independent control over each wheel gives the operator "unmatched" zero-turning radius maneuverability.

The Promaster 100 unit is powered by a 16- or 18-hp Kohler Magnum engine and features a hydrostatic drive system with two cast-iron wheel drive motors and two Sundstrand variable displacement pumps.

With approximate ground speeds of 0 to 5.7 mph, the Promaster 100 should mow quickly as well as smoothly. The pressure-sensitive, twin T-bar steering levers provide independent wheel control and enable the operator to maneuver as well as change from forward to reverse without changing gears.

An oil reservoir with cooler coils to lower the transmission operating temperature is standard.

Circle No. 199 on Reader Inquiry Card

Flails made for commercial mowing jobs

Kubota Tractor Corp.'s new F3620 front-mount flail mower delivers heavy-duty performance for the most difficult commercial contracts.

The F3620 cuts a 60-inch swath with 152 fine-cut knives as standard attachments. An adjustable cutting height ranges from 0.25 to 4 inches in increments of 0.25 inches.

The mower has a 6.375-inch ground clearance, pneumatic gauge wheels, a full-width rear roller and outboard-mounted grease fittings for easy maintenance.

Tip velocity is 9136 feet-per-minute. The unit is PTO-driven and performs quick and clean cutting. Its specially-designed deck distributes grass clippings evenly back into the turf.

In addition, its on-deck weight transfer system shifts weight from the rear roller to the front tires for better traction.

Kubota's F3620 weighs 515 pounds.

Circle No. 200 on Reader Inquiry Card



Inventory control gives user various tracking functions

Armor Systems of Maitland, Fla., has designed a new version of its Accounting Software.

The Inventory Control module brings more flexibility to accounting systems. Added to the software are point of sale, inventory control, accounts receivable,

purchase orders and customer information modules. Other standard features include listing items by part number with the flexibility to automatically adjust reorder levels based on sales activity. It also will print forms and labels for bins or shelves.

Landscape managers can reduce costs, increase productivity and control all business activity.

Circle No. 201 on Reader Inquiry Card

Record important data with touch of a button

Agricultural Data Systems, specialists in customized computer systems for the agricultural industry, has developed a similar system for the landscaping contractor using the same Touch Memory Buttons.

DataTrack improves efficiency and accuracy, with the touch of a button.

Information such as name, date, time, location and job performed can be recorded and flowed into many accounting packages or spreadsheets.

Information can be used for billing, bidding and payroll.

By using new technology, information can be collected at the job site instantly and accurately.

The system lets the contractor have access to information available on all job activities within seconds.

It costs \$4 to install a Touch Memory Button at each location.

Circle No. 202 on Reader Inquiry Card

Herbicide labeled expanded to include warm-season turf

DowElanco has expanded the label on its Confront post-emergence herbicide to include warm-season turf.

Confront controls up to 35 species of broadleaf weeds, including narrowleaf plantain, henbit, prostrate spurge and other broadleaves.

University and private cooperator trials have determined that Confront is "nearly 100 percent effective" against dandelion, clover and plantain, and other problem species.

Confront is now labeled for use on Southern turfgrasses, including bahiagrass, bermudagrass, centipedegrass and tall fescue.

A non-phenoxy herbicide, Confront can be used in all turf areas including lawns, parks, golf courses, commercial grounds, residential areas and other public facilities such as hospitals and schools.

Circle No. 203 on Reader Inquiry Card

MARKET SHOWCASE

For all ads under \$250, payment must be received by the classified closing date. We accept VISA, MASTERCARD and AMERICAN EXPRESS. Credit card orders are accepted by phone. **Send ad copy with payment to: Bill Smith, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, Ohio 44130, or call (800) 225-4569 ext. 670** outside Ohio; (216) 891-2670 inside Ohio; FAX (216) 826-2865.

EQUIPMENT FOR SALE

LAWN SPRINKLING CABLE LAYING

WITHOUT A **LINE-WARD** LINE LAYING MACHINE YOU COULD BE MISSING THE BEST BUY ON THE MARKET!!

- Moves On Tracks, Not Wheels, For Superior Traction
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- Up to 16" Depths



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COMMERCIAL INSURANCE FOR LAWN CARE FIRMS "GREEN INDUSTRY SPECIALISTS"

M.F.P. Insurance Agency is dedicated to providing comprehensive insurance programs to the Green Industry at competitive prices. We back up this dedication with a staff of professionals who understand every facet of your business, from marketing to customer service. We know how to properly insure your company whether you're a sole proprietor or a multi-state operation.

Just as your customers look to you for lawn care advice, people come to us for insurance advice because they do not want to become insurance experts themselves. If you want good advice, the right coverage, and competitive rates, please contact:

Richard P. Bersnak, President

Jill A. Leonard, V.P.

1-800-886-2398

FAX: 614-221-2203

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TURBO TURF HYDRO SEEDING SYSTEM SEED FASTER, BETTER, AT LESS COST



- ➔ Seed-mulch-fertilize in one fast step.
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- ➔ No messy straw.
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- ➔ Very attractive green appearance.

150 Gal. Systems (2000 sq. ft.)	\$2795.00
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500 Gal. Systems (6600 sq. ft.)	\$4795.00
750 Gal. Systems (1/4 acre)	\$7995.00
1000 Gal. Systems (1/3 acre)	\$9995.00

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1108 Third Ave. New Brighton, PA 15066

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Real Green Computers
1970 Winner Street, Walled Lake, MI 48390

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BOX NUMBER REPLIES: Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 131 W. 1st St., Duluth, MN 55802-2065. Please

BUSINESS FOR SALE

FOR SALE: LANDSCAPE DESIGN/BUILD FIRM in beautiful Finger Lakes region of upstate NY. Average sales over \$400K annually. Profitable, turn-key operation. \$175K. Reply to LM Box 508. 6/94

EDUCATIONAL OPPORTUNITIES

NOW... LEARN PROFESSIONAL LANDSCAPING AND GARDENING at home. Accredited program provides thorough training in all phases of commercial and residential landscaping. Diploma awarded. Free brochure describes program and opportunities in detail. Call 1-800-326-9221 or write Lifetime Career Schools, Dept: LF0154, 101 Harrison Street, Archbald, PA 18403. 12/94

CAREER TRAINING IN HORTICULTURE! New York Botanical Garden offers a two year program of practical field work and academic classes in botany, horticulture and landscape design. Write School of Professional Horticulture, New York Botanical Garden, Bronx, NY 10458, or call (718)817-8797. 6/94

FOR SALE

1988 SUPER DUTY FORD DIESEL LAWN TRUCK 600/100 gal tanks, plenty of bed space for granular. Fully equipped with two hose reels. This vehicle in excellent condition. Call Jim at 603-772-3395. 7/94

For Sale: Thriving southern California landscape co. Millions annually, with growth potential. Excellent location, complete maintenance and construction with trucks, tools, yard and office. Busy year around. Sacrifice at \$430,000. Landscape Industries 818-790-1502. 12/94

BUCKET TRUCK: Hi Ranger 65', 57', 50'. Sky-workers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Pete Mainka Enterprises, 633 Cecilia Drive, Pewaukee, WI 53072. 800-597-8283. 12/94

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EQUIPMENT FOR SALE

PIPE LOCATOR INEXPENSIVE! Locates, traces underground drain, water pipe lines of clay, PVC, ABS, steel, cement. Finds sprinklers, valves, clogs. Bloch and Company, Box 18058, Cleveland, Ohio 44118. (216)371-0979. TF

Brouwer 24 inch Sod Harvester, Ford 3910 diesel, 400 hrs. Excellent condition! Lights but no roof. \$20,000.00. Phone 517-332-8410. 6/94

SAVE \$\$\$\$\$ ON LAWNMOWER PARTS! Tired of paying too much for commercial walkbehind parts? **DEEP DISCOUNTS** on blades, belts, tires, transmissions, pulleys, filters and equipment. **EASY ORDERING, FAST DELIVERY** and **GUARANTEED SAVINGS!** Call Lawn Care Parts Unlimited (800)574-6389. 6/94

REINCO HYDROGRASSERS and power mulchers in stock. Opdyke Inc., (Philadelphia Area) 215-721-4444. 12/94

BUCKET TRUCKS: Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers: New Morbark Disc and Drum Style. New Rayco Stump grinders. Best prices anywhere. Used Chippers: Asplundh, Morbark, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as-is or reconditioned. We also buy your surplus equipment. Opdyke's, Hatfield (Philadelphia Area). 215-721-4444. 12/94

FINN HYDROSEEDERS AND MULCH BLOWERS- NEW AND USED LARGE PARTS INVENTORY- SAME DAY SERVICE. (BALTIMORE AREA) WOLBERT & MASTER, INC. 410-335-9300. 12/94

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HELP WANTED

Assistant Superintendent. Will direct and participate in the construction, renovation and maintenance of the golf course and country club. Supervises the operation, maintenance, and repair of motorized and mechanical golf equipment, pumps, irrigation and drainage systems. Supervises and participates in pest control method and materials, proper use of fertilizers and soil conditions. Assists in planning, scheduling of all tasks and practices employed on the golf course. 40 hours per week, 7:00 A.M. to 3:00 P.M., \$31,000.00 per year. Must have 3 years as an Assistant Superintendent or 3 years as an Office Manager/Assistant Superintendent of golf course. Must have current Florida Commercial Applicator Restricted Use Pesticides License. Will supervise 22 employees. Send resume to: Job Service of Florida, 2660 West Oakland Park Boulevard, Fort Lauderdale, Florida 33311-1347. Re: Job Order Number FL-1014266. 6/94

Maintenance Managers & Supervisors: One of the nation's largest and fastest growing full service landscape companies has an immediate need for experienced maintenance managers and superintendents, as well as entry level maintenance supervisors in the Midwest, Southwest, Mid-Atlantic, Northeast and Southeast states. The company seeks energetic, team oriented college graduates with proven leadership, communication and interpersonal skills. The company offers full-time positions, excellent advancement opportunities and exceptional compensation and benefits with an industry leader celebrating 54 years of uncompromising customer service. For immediate confidential consideration, please send or fax your resume to: The Brickman Group, Ltd., Corporate Office, 375 S. Flowers Mill Road, Langhorne, PA 19047, 215-757-9630, EOE 6/94

LANDSCAPE SALES- Quality, growth oriented landscape management company seeks an ambitious sales professional to work in the Baltimore/Washington, DC area. Must have a minimum of five years experience estimating all phases of landscape/site management. Excellent compensation and benefits with room for advancement. EOE. Please send resume to: LM Box 509. 7/94

LANDSCAPE PROFESSIONALS... THE GROUNDSKEEPER, AN EMPLOYEE OWNED COMPANY, is expanding throughout the Southwest. Openings for a new branch office in LAS VEGAS for a Sales Person and a Supervisor. Successful applicants must be self-motivated, organized and have 2-3 yrs exp. Supervisor must have strong supervisory skills. Bi-lingual (Eng/Span) preferred. Sales person must be dependable and have some landscaping sales exp. Pre-employment drug screening and a valid drivers license required. Excellent benefits and pay DOE. Send resumes to: P.O. Box 98347, Las Vegas, NV 89193, ATTN: Curtis. EEO/MFDV 6/94

HELP WANTED

FIELD SALES REPRESENTATIVES: Growth Products, Ltd., a progressive, fast growing manufacturer of Professional and Agricultural liquid fertilizers and organics is seeking experienced degreed sales people for mid-atlantic, north-central, south-central, and south-west territories. Experience in turf/ornamental, greenhouse, and tree care markets is desirable. Please send resume and salary history to: Growth Products, Ltd., P.O. Box 1259, White Plains, NY 10602, Attn: Human Resource Dept. 7/94

LANDSCAPE MAINTENANCE- IRRIGATION SUPERVISOR: For largest landscape maintenance co. in nation. Need minimum 3 years supervisory experience in trouble shooting, scheduling, training and assisting in repair and retrofit large commercial irrigation systems. Thorough knowledge of all types of systems. English/Spanish bilingual a plus. Send resumes to: ENVIRONMENTAL CARE, INC., 825 Mabury Road, San Jose, CA 95133. 6/94

LANDSCAPE SALES- Moon Landscaping, Inc., one of the fastest growing site management companies on the east coast, is looking for a full-time qualified, career oriented sales professional for the northern New Jersey area. Previous experience with landscape firm required. Ability to estimate both landscape and site maintenance. Must be aggressive and self motivated. Excellent opportunity with compensation and benefits. Please direct resume to Moon Landscaping, Inc., Box 482, Yardley, PA 19067, attn. H. Shannon Wilson or call 215-968-5071 and ask for Garth. 7/94

LANDSCAPE MAINTENANCE SUPERVISORS needed with established background in commercial landscape and irrigation. We are looking for quality conscientious, energetic, team oriented industry professionals. Must be able to make decisions and be creative, self-motivated with strong organizational skills. We provide continuous training and offer competitive salary/benefits. Good driving record and pre-employment drug test required. EOE. Send resume to Northwest Landscape Industries, 16075 S.W. Upper Boones Ferry Rd., Tigard, OR 97224. 6/94

GROUNDS MANAGEMENT SALES: Central N.J. area, Background in sales to corporate clientele. Strong motivation, proven sales experience. Must be articulate, organized, aggressive. Duties: prospecting, estimating, sales. Send resume. Control Services, 737 New Durham Road, Edison, NJ 08817. Fax (908)548-4359. 7/94

BUSINESS WANTED

BUSINESS WANTED: Large landscape maintenance company located in the mid-Atlantic region is looking to acquire a landscape maintenance company in the Baltimore/Washington, DC area. Must have annual sales in excess of \$250,000 in maintaining commercial accounts. Please respond to: LM Box 510. 7/94

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AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

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JUNE 8
JULY 7
AUGUST 8
SEPTEMBER 8
OCTOBER 6
NOVEMBER 8

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101	118	135	152	169	186	203	220	237	254	271	288	305	322
102	119	136	153	170	187	204	221	238	255	272	289	306	323
103	120	137	154	171	188	205	222	239	256	273	290	307	324
104	121	138	155	172	189	206	223	240	257	274	291	308	325
105	122	139	156	173	190	207	224	241	258	275	292	309	326
106	123	140	157	174	191	208	225	242	259	276	293	310	327
107	124	141	158	175	192	209	226	243	260	277	294	311	328
108	125	142	159	176	193	210	227	244	261	278	295	312	329
109	126	143	160	177	194	211	228	245	262	279	296	313	330
110	127	144	161	178	195	212	229	246	263	280	297	314	331
111	128	145	162	179	196	213	230	247	264	281	298	315	332
112	129	146	163	180	197	214	231	248	265	282	299	316	333
113	130	147	164	181	198	215	232	249	266	283	300	317	334
114	131	148	165	182	199	216	233	250	267	284	301	318	335
115	132	149	166	183	200	217	234	251	268	285	302	319	336
116	133	150	167	184	201	218	235	252	269	286	303	320	337
117	134	151	168	185	202	219	236	253	270	287	304	321	338



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1. BUSINESS & INDUSTRY

MY PRIMARY BUSINESS AT THIS LOCATION IS:
(PLEASE MARK ONLY ONE IN EITHER A, B OR C)

A. Landscaping/Ground Care at one of the following types of facilities:

- 01 0005 Golf courses
- 02 0010 Sports Complexes
- 03 0015 Parks
- 04 0025 Schools, colleges, & universities
- 05 Other type of facility (please specify) _____

B. Contractors/Service Companies/Consultants:

- 06 0105 Landscape contractors (installation & maintenance)
- 07 0110 Lawn care service companies
- 08 0112 Custom chemical applicators
- 09 0135 Extension agents/consultants for horticulture
- 10 Other contractor or service (please specify) _____

C. Suppliers:

- 11 0205 Sod growers
- 12 Other supplier (specify) _____

Which of the following best describes your title:
(mark only one)

- 13 10 EXECUTIVE/ADMINISTRATOR
- 14 20 MANAGER/SUPERINTENDENT
- 15 30 GOVERNMENT OFFICIAL
- 16 40 SPECIALIST
- 17 50 OTHER TITLED AND NON-TITLED PERSONNEL (specify) _____

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105	122	139	156	173	190	207	224	241	258	275	292	309	326
106	123	140	157	174	191	208	225	242	259	276	293	310	327
107	124	141	158	175	192	209	226	243	260	277	294	311	328
108	125	142	159	176	193	210	227	244	261	278	295	312	329
109	126	143	160	177	194	211	228	245	262	279	296	313	330
110	127	144	161	178	195	212	229	246	263	280	297	314	331
111	128	145	162	179	196	213	230	247	264	281	298	315	332
112	129	146	163	180	197	214	231	248	265	282	299	316	333
113	130	147	164	181	198	215	232	249	266	283	300	317	334
114	131	148	165	182	199	216	233	250	267	284	301	318	335
115	132	149	166	183	200	217	234	251	268	285	302	319	336
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- | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 101 | 118 | 135 | 152 | 169 | 186 | 203 | 220 | 237 | 254 | 271 | 288 | 305 | 322 |
| 102 | 119 | 136 | 153 | 170 | 187 | 204 | 221 | 238 | 255 | 272 | 289 | 306 | 323 |
| 103 | 120 | 137 | 154 | 171 | 188 | 205 | 222 | 239 | 256 | 273 | 290 | 307 | 324 |
| 104 | 121 | 138 | 155 | 172 | 189 | 206 | 223 | 240 | 257 | 274 | 291 | 308 | 325 |
| 105 | 122 | 139 | 156 | 173 | 190 | 207 | 224 | 241 | 258 | 275 | 292 | 309 | 326 |
| 106 | 123 | 140 | 157 | 174 | 191 | 208 | 225 | 242 | 259 | 276 | 293 | 310 | 327 |
| 107 | 124 | 141 | 158 | 175 | 192 | 209 | 226 | 243 | 260 | 277 | 294 | 311 | 328 |
| 108 | 125 | 142 | 159 | 176 | 193 | 210 | 227 | 244 | 261 | 278 | 295 | 312 | 329 |
| 109 | 126 | 143 | 160 | 177 | 194 | 211 | 228 | 245 | 262 | 279 | 296 | 313 | 330 |
| 110 | 127 | 144 | 161 | 178 | 195 | 212 | 229 | 246 | 263 | 280 | 297 | 314 | 331 |
| 111 | 128 | 145 | 162 | 179 | 196 | 213 | 230 | 247 | 264 | 281 | 298 | 315 | 332 |
| 112 | 129 | 146 | 163 | 180 | 197 | 214 | 231 | 248 | 265 | 282 | 299 | 316 | 333 |
| 113 | 130 | 147 | 164 | 181 | 198 | 215 | 232 | 249 | 266 | 283 | 300 | 317 | 334 |
| 114 | 131 | 148 | 165 | 182 | 199 | 216 | 233 | 250 | 267 | 284 | 301 | 318 | 335 |
| 115 | 132 | 149 | 166 | 183 | 200 | 217 | 234 | 251 | 268 | 285 | 302 | 319 | 336 |
| 116 | 133 | 150 | 167 | 184 | 201 | 218 | 235 | 252 | 269 | 286 | 303 | 320 | 337 |
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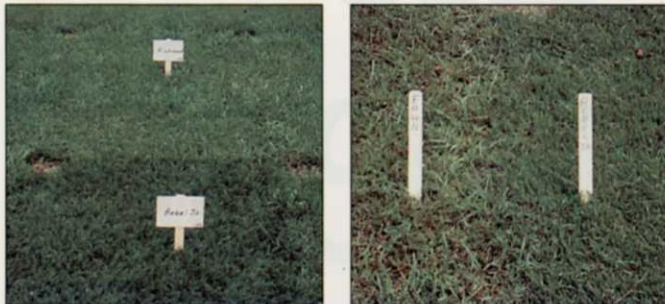
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Excellent Dark Color: When compared to other tall fescues, Rebel Jr provides the deep, dark color preferred by turf professionals.



The darker color of Rebel Jr is apparent in these test plots comparing Rebel Jr to other tall fescues.

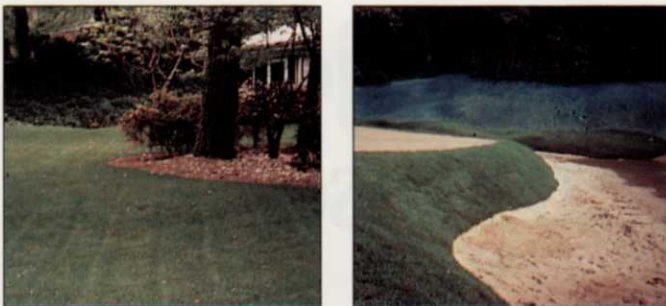
Less Clippings: The lower, slower growth rate of Rebel Jr results in easier mowing and 30% less clippings. However, it is proven to have an advantage over the current, much-talked-about "extreme dwarfs"; as Rebel Jr does not grow so slowly that the plant's rate of establishment, vigor, tolerance to traffic and stress, or recuperative qualities are affected. The moderately slow growth rate of Rebel Jr is a distinct advantage over that of the extreme dwarf varieties.

Rate of Establishment: While Rebel Jr displays moderately slow growth, its rate of establishment is faster than the extreme dwarf varieties such as Bonsai.



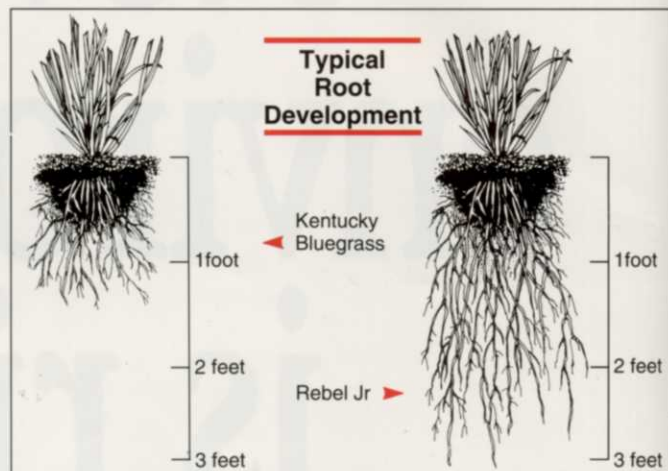
The dense, slower growth of Rebel Jr can be seen one week after mowing.

Top Performance with Less Maintenance: Rebel Jr from seed or sod is adaptable to full sun or moderate shade. It needs only low to medium maintenance and uses 25% less fertilizer than Kentucky bluegrass.



Rebel Jr will give excellent performance in sun or shade. It's ideal for use in hard-to-maintain areas such as golf course green banks, slopes and bunker faces.

Improved Drought Tolerance: A deep, extensive root system allows Rebel Jr to display excellent drought tolerance.



Recommended Seed Mixtures for Sun or Shade

HOME LAWNS

- 100% Rebel Jr Tall Fescue
- or
- 90% Rebel Jr Tall Fescue
- 10% Baron or Nassau
- Kentucky Bluegrass
- or
- 34% Rebel Jr Tall Fescue
- 33% Rebel II Tall Fescue
- 33% Tribute Tall Fescue

GOLF COURSE ROUGHS

- 90% Rebel Jr Tall Fescue
- 10% Georgetown Kentucky Bluegrass
- or
- 30% Rebel Jr Tall Fescue
- 30% Rebel II Tall Fescue
- 20% Tribute Tall Fescue
- 10% Palmer II Perennial Ryegrass
- 10% Georgetown Kentucky Bluegrass

ATHLETIC FIELDS

- 80% Rebel Jr Tall Fescue
- 10% Palmer II Perennial Ryegrass
- 10% Baron or Nassau
- Kentucky Bluegrass
- or
- 30% Rebel Jr Tall Fescue
- 30% Rebel II Tall Fescue
- 20% Tribute Tall Fescue
- 10% Palmer II Perennial Ryegrass
- 10% Baron or Nassau
- Kentucky Bluegrass

UTILITY TURF

- 100% Rebel Jr Tall Fescue
- or
- 34% Rebel Jr Tall Fescue
- 33% Rebel II Tall Fescue
- 33% Tribute Tall Fescue

GOLF COURSE BUNKERS

- Rebel Jr Tall Fescue Sod
- or
- Rebel Jr, Rebel II and Tribute Tall Fescue Sod

Use Rebel Jr wherever a tall fescue is suitable. You'll get dark color, moderately slow growth and top performance in sun or shade.



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